Vol. 1029 Number 3

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of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Rules of Practice in Patent Cases March 1983

Route to:

April 19, 1983

U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

April 19, 1983 Volume 1029 Number 3

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

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Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the Official Gazette at 1017 O.G. 10 on Apr. 13, 1982. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the domestic PCT fees have been increased as of Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. Also note that the international PCT fees have changed as of Jan. 1, 1983 and the Search Fee for the European Patent Office as Searching Authority changed as of Jan. 22, 1983. The notice regarding the change in international fees and the Search Fee for the European Patent Office appeared at 1025 O.G. 27, on 28 Dec. 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	670.00
International Fees	
Basic Fees (first 30 pages)	265.00
Basic Supplemental Fee (for each page over 30)	5.00
Designation fee (for each national or regional office)	65.00

Dec. 3, 1982.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,065,070, Re. S.N. 470,701, Filed Feb. 28, 1983, Cl. 242/107.004, DUAL SPOOL RETRACTOR, Regis V. Pilarski, et al., Owner of Record: *The Firestone Tire and Rubber Co., Akron, Ohio,* Attorney or Agent: Jesse B. Grove, Ex. Gp.: 245

4,246,484, Re. S.N. 459,254, Filed Jan. 19, 1983, Cl. 250/455, MEDICAL RADIOGRAPHIC APPARATUS, Richard W. Fetter, Owner of Record: *EMI Medical, Inc., Northbrook, Ill.,* Attorney or Agent: Ivan S. Kavrukov, et al., Ex. Gp.: 256

4,262,390, Re. S.N. 468,988, Filed Feb. 23, 1983, Cl. 19/50, ROLLER GIN AND FEED SYSTEM INCORPORATING THE SAME, Robert R. Einglett, et al., Owner of Record: *Lummus Industries, Inc., Columbus, Ga.,* Attorney or Agent: Hugh P. Carter, et al., Ex. Gp.: 353

4,279,780, Re. S.N. 464,188, Filed Feb. 7, 1983, Cl. 252/452, METHOD OF PREPARING CATALYST SUPPORTS, Robert A. Dombro, Owner of Record: *Chemplex Co., Rolling Meadows, Ill.,* Attorney or Agent: Ernest A. Wegner, et al., Ex. Gp.: 116

4,292,180, Re. S.N. 467,465, Filed Feb. 10, 1983, Cl. 210/496, MILK FILTER SOCK, Kenneth R. Zylka, et al., Owner of Record: *Meridian Industries, Inc., Milwaukee, Wis.,* Attorney or Agent: Elwin A. Andrus, et al., Ex. Gp.: 176

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,537,725, Reexam. No. 90/000,341, Requested: Mar. 10, 1983, Cl. 308/187.2, TROUGH-LIKE SEAL FOR ROLLER ASSEMBLY, Ruben E. Frost, Owner of Record: *C.L. Frost & Son, Inc., Grand Rapids, Mich.,* Attorney or Agent: Price, Heneveld, et al., Ex. Gp.: 240, Requester: Jervis B. Webb Co., Farmington Hills, Mich.

3,647,293, Reexam. No. 90/000,339, Requested: Mar. 9, 1983, Cl. 355/15, COPYING SYSTEM FEATURING COMBINED DEVELOPING-CLEANING STATION ALTERNATELY ACTIVATED, Carl A. Queener, Owner of Record: *International Business Machines Corp., Armonk, N.Y.,* Attorney or Agent: Charles E. Rohrer, Ex. Gp.: 210, Requester: Owner

3,905,828, Reexam. No. 90/000,344, Requested: Mar. 15, 1983, Cl. 429/218, ELECTROLYTIC PROCESSES AND ELECTRODES THEREFOR, Anthony Clifford Barber, Owner of Record: *Imperial Metal Industries (Kynoch), Ltd., Warwickshire, England,* Attorney or Agent: Cushman, Darby & Cushman, Ex. Gp.: 112, Requester: Anomet Products, Inc., Natick, Mass.

4,193,247, Reexam. No. 90/000,346, Requested: Mar. 22, 1983, Cl. 52/713, PANEL MOUNTING CLIP, Robert E. Heckelsberg, Owner of Record: *AMCA International Corp., Hanover, N.H.,* Attorney or Agent: Harness, Dickey & Pierce, Ex. Gp.: 354, Requester: Butler Manufacturing Co., Grandview, Mo.

4,213,282, Reexam. No. 90/000,342, Requested: Mar. 16, 1983, Cl. 52/404, METAL PANEL ROOFING STRUCTURE, Robert E. Heckelsberg, Owner of Record: *AMCA International Corp., Hanover, N.H.,* Attorney or Agent: Harness, Dickey & Pierce, Ex. Gp.: 354, Requester: Butler Manufacturing Co., Grandview, Mo.

4,263,819, Reexam. No. 90/000,347, Requested: Mar. 22, 1983, Cl. 74/573, INERTIAL METHOD OF CENTERING A CONSTANTLY CIRCULAR RIM ON ITS HUB AND CORRESPONDING ROTARY DEVICE, Pierre Poubeau, Owner of Record: *Societe Nationale Industrielle Aerospatiale, Paris, France,* Attorney or Agent: Karl W. Flocks, Assoc., Ex. Gp.: 350, Requester: Owner

4,296,581, Reexam. No. 90/000,345, Requested: Mar. 18, 1983, Cl. 52/520, ROOFING STRUCTURE, Robert E. Heckelsberg, Owner of Record: *AMCA International Corp., Hanover, N.H.,* Attorney or Agent: Harness, Dickey & Pierce, Ex. Gp.: 350, Requester: Butler Manufacturing Co., Grandview, Mo.

4,371,576, Reexam. No. 90/000,343, Requested: Mar. 17, 1983, Cl. 428/92, HOT MELT ADHESIVE BONDED PILE FABRICS, Greville Machell, Owner of Record: *Milliken Research Corp., Spartanburg, S.C.,* Attorney or Agent: Terry T. Moyer, Ex. Gp.: 160, Requester: Owner

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National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS

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The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

Technical and licensing information on specific inventions may be obtained by writing to:

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Springfield, Va. 22151

Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

U.S. DEPARTMENT OF AGRICULTURE

SN 6-337,045 (4,362,527). RADIATION-RESISTANT FLUOROAROMATIC CELLULOSIC ETHERS.

SN 6-229,217 (4,365,464). APPARATUS TO UNIFORMLY CONTROL WRAPPING A FILAMENT AROUND THE SURFACE OF A SPUN CORE YARN DURING RING SPINNING.

SN 6-270,676 (4,365,504). METHOD AND APPARATUS FOR FIELD TESTING OF ANEMOMETERS.

SN 6-302,008 (4,365,966). PROCESS FOR MODIFYING CELLULOSIC FABRICS FOR IMPROVED HEAT TRANSFER PRINTING.

SN 6-326,996 (4,374,850). METHOD OF CONTROLLING PARASITIC TICKS.

SN 6-326,995 (4,374,851). METHOD OF CONTROLLING PARASITIC TICKS.

U.S. DEPARTMENT OF THE AIR FORCE

SN 6-310,689 (4,362,570). SOLVENT MIXTURE FOR REMOVING POLYSULFIDE AND SILICONE RUBBER COATINGS.

SN 6-304,126 (4,365,034). ACETYLENE-TERMINATED POLYIMIDE COMPOSITIONS.

SN 6-318,653 (4,365,109). COAXIAL CABLE DESIGN.

SN 6-256,881 (4,365,173). PHASE SHIFTER ADJUSTMENT APPARATUS.

SN 6-343,000 (4,366,323). POLYMERIZATION OF ARYLENE BIS-SILANOLS.

SN 6-274,697 (4,374,715). METHOD FOR THE PREPARATION OF POLY (CARBONOYL FLUORIDE) OLIGOMERS.

U.S. DEPARTMENT OF THE ARMY

SN 6-235,060 (4,360,954). METHOD OF MAKING CAST-IN-PLACE SABOTS.

SN 6-300,533 (4,361,011). CRYOGENIC COOLING SYSTEM.

SN 6-216,416 (4,361,040). INTEGRATING ANGULAR ACCELEROMETER.

SN 6-213,522 (4,361,054). HOT-WIRE ANEMOMETER GYRO PICKOFF.

SN 6-189,980 (4,361,071). FIRE CONTROL MECHANISM.

SN 6-163,542 (4,361,384). HIGH LUMINANCE MINATURE DISPLAY.

SN 6-272,859 (4,361,526). THERMOPLASTIC COMPOSITE ROCKET PROPELLANT.

SN 6-201,678 (4,361,760). TWO-DEGREE-OF-FREEDOM GYRO WITH RADIANT ENERGY PICKOFFS.

SN 6-174,293 (4,361,886). SATELLITE COMMUNICATION SYSTEM.

SN 6-266,025 (4,361,911). LASER RETROREFLECTOR SYSTEM FOR IDENTIFICATION OF FRIEND OR FOE.

SN 6-154,557 (4,362,085). FLIGHT CONTROL SYSTEM.

SN 6-142,548 (4,362,106). FLOW DEFLECTOR FOR AIR DRIVEN POWER SUPPLY.

SN 6-230,922 (4,362,326). DISCONNECTABLE COUPLING.

SN 6-297,643 (4,362,588). METHOD OF FABRICATING A DUCTED BLANKET FOR A ROTOR SPAR.

SN 6-206,913 (4,362,938). INFRARED VIEWING SYSTEM.

SN 6-220,321 (4,362,965). COMPOSITE/LAMINATED WINDOW FOR ELECTRON BEAM GUNS.

SN 6-136,124 (4,364,300). COMPOSITE CORED COMBAT VEHICLE ARMOR.

SN 6-275,531 (4,364,775). AQUEOUS OXIDATIVE SCRUBBER SYSTEMS FOR REMOVAL OF MERCURY.

SN 6-289,438 (4,365,059). NITRATION OF CELLULOSE.

SN 6-174,093 (4,365,149). MORTAR FIRE CONTROL SYSTEM.

SN 6-196,508 (4,365,182). METHOD OF FABRICATING ACCELERATION RESISTANT CRYSTAL RESONATORS AND ACCELERATION RESISTANT CRYSTAL RESONATORS SO FORMED.

SN 6-196,957 (4,365,481). METHOD AND APPARATUS FOR REMOVAL OF SODIUM CARBONATE FROM CYANIDE PLATING BATHS.

SN 6-194,314 (4,365,556). METHOD AND SYSTEM FOR PREVENTING BASE SEPARATION OF CAST EXPLOSIVES IN PROJECTILES.

SN 6-335,925 (4,365,982). CRYOGENIC REFRIGERATOR.

SN 6-318,766 (4,366,229). METHOD OF MAKING COLD SHIELD FOR INFRARED DETECTOR ARRAY.

U.S. DEPARTMENT OF COMMERCE

SN 6-293,783 (4,361,630). ULTRA-BLACK COATING DUE TO SURFACE MORPHOLOGY.

U.S. DEPARTMENT OF HEALTH & HUMAN SERVICES

SN 6-329,590 (4,362,510). CEMENTITIOUS DENTAL COMPOSITIONS WHICH DO NOT INHIBIT POLYMERIZATION.

SN 6-341,572. RICIN AND MODECCIN REAGENTS EFFECTIVE AS TUMOR SUPPRESSIVE CYTOTOXIC REAGENTS.

SN 6-343,026. HEAT TREATMENT OF A NON-A, NON-B HEPATITIS AGENT TO PREPARE A VACCINE.

SN 6-440,728. PROCESS AND DEVICE FOR X-RAY SYSTEM QUALITY ASSURANCE.

SN 6-446,408. ULTRASONIC THERAPY APPLICATOR THAT MEASURES DOSAGE.

SN 6-456,401. IMPROVED PROTOCOL FOR THE TREATMENT OF GRAFT VERSUS HOST DISEASE.

SN 6-458,312. MEDICATION COMPLIANCE MONITORING DEVICE.

SN 6-459,251. ADAPTABLE BLOOD PRESSURE CUFF FOR HUMANS AND ANIMALS.

SN 6-461,954. IMPROVED HELICAL COIL FOR DIATHERMY APPARATUS.

U.S. DEPARTMENT OF THE INTERIOR

SN 6-258,075 (4,362,557). PURIFYING TITANIUM-BEARING SLAG BY PROMOTED SULFATION.

SN 6-311,487 (4,362,615). FROTH FLOTATION OF RUTILE.

Availability of Patent and Trademark Rules

The Office is publishing a consolidation of the patent rules presently in effect and a revised index to assist patent practitioners.

Individual copies at $5.00 per copy can be obtained from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402 on or after April 19, 1983.

PATENT NOTICES

Certificates of Correction for the Week of Apr. 19, 1983

D. 268,003	4,336,852	4,356,790	4,368,124
4,157,789	4,336,853	4,357,003	4,368,672
4,189,621	4,338,342	4,357,747	4,368,691
4,224,263	4,338,351	4,357,929	4,368,785
4,226,342	4,339,248	4,358,442	4,368,966
4,238,356	4,340,171	4,358,487	4,369,622
4,243,579	4,342,820	4,359,327	4,369,859
4,250,216	4,343,403	4,359,653	4,370,721
4,253,609	4,346,455	4,359,785	4,370,842
4,269,627	4,346,456	4,360,525	4,371,022
4,280,016	4,346,958	4,360,558	4,371,417
4,281,086	4,348,747	4,360,768	4,371,607
4,294,826	4,349,395	4,360,892	4,372,060
4,297,490	4,349,568	4,361,183	4,372,088
4,300,465	4,349,616	4,361,268	4,372,521
4,304,830	4,350,022	4,361,656	4,372,652
4,305,421	4,350,719	4,361,932	4,372,912
4,307,986	4,351,769	4,362,454	4,372,932
4,319,043	4,353,226	4,362,667	4,372,963
4,320,377	4,353,268	4,362,819	4,373,206
4,324,280	4,353,741	4,362,866	4,373,540
4,324,433	4,354,273	4,363,485	4,373,685
4,324,779	4,354,897	4,363,654	4,373,745
4,324,852	4,355,280	4,363,849	4,373,834
4,329,968	4,355,329	4,364,334	4,373,838
4,332,132	4,355,388	4,364,817	4,374,109
4,332,208	4,355,449	4,366,306	4,374,252
4,333,099	4,355,754	4,366,371	4,374,985
4,333,795	4,356,261	4,367,507	

Disclaimers

Des. 247,744.—*Marcel Duchamp,* Chamalieres, France. TIRE. Patent dated Apr. 18, 1978. Disclaimer filed Feb. 4, 1983, by the assignee, *Compagnie Generale Des Etablissements Michelin.*

Hereby enters this disclaimer to the sole claim of said patent.

Des. 251,188.—*Jean Pommier,* Clermont-Ferrand, France. TIRE. Patent dated Feb. 27, 1973. Disclaimer filed Feb. 4, 1983, by the assignee, *Compagnie Generale Des Etablissements Michelin.*

Hereby enters this disclaimer to the sole claim of said patent.

Des. 256,802.—*Jacobus E. Hazenbroek,* Numansdorp, Netherlands. EVISCERATOR TOOL. Patent dated Sept. 9, 1980. Disclaimer filed Jan. 20, 1983, by the assignee, *Cagle's, Inc.*

Hereby enters this disclaimer to the claim of said patent.

3,520,861.—*John E. Thomson,* and *George E. Waples, Jr.,* Lake Jackson, Tex. COPOLYMERS OF ETHYLENE. Patent dated July 21, 1970. Disclaimer filed Jan. 31, 1983, by the assignee, *The Dow Chemical Co.*

Hereby enters this disclaimer to claims 1 through 8 and 10 of said patent.

3,802,744.—*Charles E. Grawey,* Peoria; *Keith E. Koch,* Tremont; and *Robert W. Untz,* Hanna City, Ill. SPLIT RIM ASSEMBLY FOR EARTHWORKING VEHICLES. Patent dated Apr. 9, 1974. Disclaimer filed Feb. 22, 1983, by the assignee, *Caterpillar Tractor Co.*

Hereby enters this disclaimer to claims 1–4 of said patent.

4,010,146.—*David D. Russell,* Atwater; and *George Shkapenko,* Akron, Ohio. POLYOL BLENDS AND POLYURETHANE PREPARED THEREFROM. Patent dated Mar. 1, 1977. Disclaimer filed Sept. 27, 1982, by the assignee, *Eaton Corp.*

Hereby enters this disclaimer to claim 3 of said patent.

4,238,896.—*William E. Lanz,* Joliet and *Visvaldis A. Stepe,* Willow Springs, Ill. CUTTING EDGE ASSEMBLY FOR A LOADER BUCKET. Patent dated Dec. 16, 1980. Disclaimer filed Feb. 22, 1983, by the assignee, *Caterpillar Tractor Co.*

Hereby enters this disclaimer to all claims of said patent.

4,314,612.—*David L. Thomas* and *Donald J. Hackman,* Columbus, Ohio. HYDRAULIC LINEAR IMPACT TOOL. Patent dated Feb. 9, 1982. Disclaimer filed Jan. 31, 1983, by the assignee, *Battelle Development Corp.*

Hereby enters this disclaimer to all claims of said patent.

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The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

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Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

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	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
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Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, Ext. 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
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	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
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	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
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Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

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*Collection organized by subject matter.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF February 19, 1983

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-16-81
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	11-20-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	7-14-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	1-20-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	11-12-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	4-7-81
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-12-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-24-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	1-07-81
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	8-25-80
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	1-13-81
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-18-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director .... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	5-18-81
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-17-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	9-12-80

Expiration of patents: The patents within the range of numbers indicated below expire during February 1983, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,231,896 to 3,237,200, inclusive

Plant Patents ..... Numbers 2,591 to 2,605 inclusive

REEXAMINATIONS

APRIL 19, 1983

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1, 3,953,309 (74th)

POLYMERIZATION COMPOSITIONS AND PROCESSES HAVING POLYMERIC BINDING AGENTS

Michael N. Gilano, Fullerton, Calif.; Richard E. Beaupre, West Barrington, R.I.; Melvin A. Lipson, Fullerton, Calif., assignors to Dynachem Corporation, Santa Fe Springs, Calif.

Reexamination Request No. 90/000,018, Jul. 2, 1981.
Reexamination Certificate for Patent No. 3,953,309, issued Apr. 27, 1976, Ser. No. 529,062, Dec. 3, 1974.
Division of Ser. No. 315,153, Dec. 14, 1972, Pat. No. 3,887,450, which is a continuation of Ser. No. 112,797, Feb. 4, 1971, abandoned.
U.S. Cl. 204/159.16 **Int. Cl.³ C08F *2/48, 2/46***

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1, 7–10, 17, 21, 25, 30, 31, 34 and 37 are determined to be patentable as amended.

Claims 2–6, 11–15, 16, 18–20, 22–24, 26–29, 32, 33, 35, 36 and 38 dependent on amended claims, are determined to be patentable.

New claims, 39–42 are added and determined to be patentable.

1. A process for making a photoresist which comprises: preparing a photopolymerizable layer *characterized by being used as a photoresist in the form of a storable sheet or roll on a peelable film support* [comprising] *consisting essentially of:*

A. from 10 to 60 parts by weight of an addition polymerizable material consisting essentially of and being solely one or more non-gaseous compounds, containing at least two terminal ethylenic groups, having a boiling point above 100°C. and being selected from the group consisting of an unsaturated ester of a polyol, an unsaturated amide, and a vinyl ester;

B. from 0.001 to 10 parts by weight of a photoinitiated free-radical generating addition polymerizing initiating system;

C. from 0.001 to 5 parts by weight of a thermal-addition polymerization inhibitor; and

D. from 40 to 90 parts by weight of a preformed macromolecular polymeric binding agent which is a polymer of:

a first monomeric material which contains one or more non-acidic vinyl compounds selected from the group having the general formula:

wherein R is hydrogen, and alkyl group having from 1 to 6 carbon atoms or a halo group; and a second monomeric material which consists essentially of one or more alpha,beta-*ethylenically unsaturated* [carboxyl] *carboxylic acid- or anhydride*-containing monomers having from 3 to 15 carbon atoms;

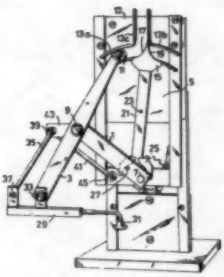
wherein the ratio of the first monomeric material to the second monomeric material is sufficient to render *substantially all of* the binding agent soluble in a dilute *substantially wholly* aqueous solution containing [from 00.1 to 10 percent of a water-soluble base]; *2% sodium carbonate* exposing a portion of said photopolymerizable layer to actinic light; and washing said layer with a dilute *substantially wholly* aqueous alkaline solution to dissolve the unexposed portion of the photopolymerizable layer *wherein the exposed portion of the layer is unaffected by sequential contact first with said dilute aqueous solution containing 2% sodium carbonate and subsequently followed by a 45° Baumé solution of ferric chloride and further wherein the photopolymerized portion of the composition is removable from a substrate by a heated solution containing 3% sodium hydroxide.*

B1 3,902,606 (75th)

HANDLING APPARATUS

Arne Ingbert Rönbeck, Olofstrom, Sweden, assignor to AB Volvo, Goteborg, Sweden

Reexamination Request No. 90/000,262, Sep. 28, 1982.
Reexamination Certificate for Patent No. 3,902,606, issued Sep. 2, 1975, Ser. No. 498,703, Aug. 19, 1974.
Claims priority, application Sweden, Aug. 23, 1973, 731/487
U.S. Cl. 414/733 **Int. Cl.³ B23Q *7/04***



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–8 is confirmed.

1. A handling apparatus for reciprocatingly moving a working member (29) in a substantially rectilinear, relatively long first movement path (BC) and in a substantially rectilinear, relatively short second movement path (CD) which is connected to and is normal to said first movement path, said apparatus being particularly intended as a feed apparatus arranged to effect a horizontal feed movement and a vertical raising and lowering movement, wherein said working member (29) is mounted on a first end (E) of a rod (3), the other end (F) of which is guided by guide means (13) mounted on a support to follow a predetermined movement path (KJHJL) when said rod is driven by a oscillatingly pivotable crank arm (1) which is pivotally connected at one end to said rod centrally between the ends thereof, the other end of the crank arm being mounted on the support and characterized in that the geometric extension of the pivot axis (O) of the crank arm (1) intersects the path (BC) travelled by said first end (E) of said rod (3) during the movement of said end along said first movement path, the length (*a*) of

said arm (1) being half the length (2*a*) of the rod (3); in that the path travelled by said other (F) end of said rod (3) during a portion of the movement of said first end (E) along said first movement path (BC) is a straight line (JFH) which extends normal to the movement path (BC) of said first rod end (E) and the extension of which intersects the axis (O) of the crank arm (1): and in that the path (JL) travelled by said other end (F) of said rod (3) during movement of said first rod end (E) along said second movement path (CD) is substantially circle-arcuate in shape, the centre of which circle lies on said extension of said straight line (JH).

B1 4,271,149 (76th)

GERMICIDAL IODINE COMPOSITIONS WITH ENHANCED IODINE STABILITY

Murray W. Winicov, Woodside, N.Y.; Michael Oberlander, Kansas City, Mo., assignors to West Agro-Chemical, Inc., Westwood, Kans.

Reexamination Request No. 90/000,179, Mar. 26, 1982.
Reexamination Certificate for Patent No. 4,271,149, issued Jun. 2, 1981, Ser. No. 77,787, Sep. 21, 1979.
U.S. Cl. 424/150 Int. Cl.[3] A01N *59/12*; A61K *31/74*

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–10 is confirmed.

1. A germicidal iodine composition comprising an aqueous solution of elemental iodine in a germicidally effective amount not exceeding about 1.0% and at least one organic substance which slowly reacts with iodine selected from the group consisting of iodine complexing polymers, surface active agents, alcohols, polyols and water soluble solvents, said organic substance constituting 1 to 50% by weight of said composition, whercin iodine loss during extended storage due to such reaction is controlled by providing in said composition balanced sources of iodide ion in the range of about 0.025% to 0.5% and iodate ion in the range of about 0.005% to 0.2% while maintaining a pH within the range of pH 5–7.

Patent and Trademark Office Rules

The Office is publishing below a consolidation of the patent rules presently in effect and a revised index to assist patent practitioners.

3/10/83

Date

Gerald J. Mossinghoff

Commissioner of Patents and Trademarks

CHAPTER I–PATENT AND TRADEMARK OFFICE, DEPARTMENT OF COMMERCE

EDITORIAL NOTE: Chapter I—Patent and Trademark Office, Department of Commerce, Subchapter A—General, contains patent and trademark regulations. Subchapter A has been restructured to allow parts pertaining to patent regulations and trademark regulations to be grouped separately.

SUBCHAPTER A—GENERAL

PATENTS

Part

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3 Forms for patent cases [*Removed*]
5 Secrecy of certain inventions and licenses to file applications in foreign countries
7 Register of Government interests in patents
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SUBCHAPTER A—GENERAL

*Rule changed since July 1, 1982

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AUTHORITY: 35 U.S.C. 6, unless otherwise noted.

Subpart A—General Provisions

GENERAL INFORMATION AND CORRESPONDENCE

§ 1.1 All communications to be addressed to Commissioner of Patents and Trademarks.

(a) All letters and other communications intended for the Patent and Trademark Office must be addressed to "Commissioner of Patents and Trademarks," Washington, D.C. 20231. When appropriate, a letter should also be marked for the attention of a particular officer or individual.

(b) Letters and other communications relating to international applications during the international stage and prior to the assignment of a national serial number should be additionally marked "Box PCT."

(c) Requests for reexamination should be additionally marked "Box Reexam."

NOTE: Sections 1.1 to 1.26 are applicable to trademark cases as well as to national and international patent cases except for provisions specifically directed to patent cases. See § 1.9 for definitions of "national application" and "international application."

(Pub. L. 94–131, 89 Stat. 685)

[46 FR 29181, May 29, 1981]

§ 1.2 Business to be transacted in writing.

All business with the Patent and Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

§ 1.3 Business to be conducted with decorum and courtesy.

Applicants and their attorneys or agents are required to conduct their business with the Patent and Trademark Office with decorum and courtesy. Papers presented in violation of this requirement will be submitted to the Commissioner and will be returned by his direct order. Complaints against examiners and other employees must be made in communications separate from other papers.

§ 1.4 Nature of correspondence.

(a) Correspondence with the Patent and Trademark Office comprises: (1) correspondence relating to services and facilities of the Office, such as general inquiries, requests for publications supplied by the Office, orders for printed copies of patents or trademark registrations, orders for copies of records, transmission of assignments for recording, and the like, and (2) correspondence in and relating to a particular application or other proceeding in the Office. See particularly the rules relating to the filing, processing, or other proceedings of national applications in Subpart B, §§ 1.31 to 1.352; of international applications in Subpart C, §§ 1.401 to 1.482; of reexamination of patents in Subpart D, §§ 1.501 to 1.570; and of trademark applications, §§ 2.11 to 2.189.

(b) Since each application file should be complete in itself, a separate copy of every paper to be filed in an application should be furnished for each application to which the paper pertains, even though the contents of the papers filed in two or more applications may be identical.

(c) Since different matters may be considered by different branches or sections of the Patent and Trademark Office, each distinct subject, inquiry or order should be contained in a separate letter to avoid confusion and delay in answering letters dealing with different subjects.

(Pub. L. 94–131, 89 Stat. 685)

[24 FR 10332, Dec. 22, 1959, as amended at 43 FR 20461, May 11, 1978; 48 FR 2696, Jan. 20, 1983; effective Feb. 27, 1983]

§ 1.5 Identification of application, patent or registration.

(a) When a letter concerns an application for patent, it should state the name of the applicant, the title of the invention, the serial number or international application number of the application, the date of filing the same, and, if known, the group art unit and name of the examiner to which it has been assigned (see § 1.55).

(b) When the letter concerns a patent, it should state the number and date of issue of the patent, the name of the patentee, and the title of the invention.

(c) A letter relating to a trademark application should identify it as such and by the name of the applicant and the serial number and filing date of the application. A letter relating to a registered trademark should identify it by the name of the registrant and by the number and date of the certificate.

(d) A letter relating to a reexamination proceeding should identify it as such by the number of the patent undergoing reexamination, the reexamination request control number assigned to such proceeding and, if known, the group art unit and name of the examiner to which it has been assigned.

(Pub. L. 94–131, 89 Stat. 685; 35 U.S.C. 6)

[24 FR 10332, Dec. 22, 1959, as amended at 34 FR 18857, Nov. 26, 1969; 43 FR 20461, May 11, 1978; 46 FR 29181, May 29, 1981]

§ 1.6 Receipt of letters and papers.

(a) Letters and other papers received in the Patent and Trademark Office are stamped with the date of receipt. No papers are received in the Patent and Trade-

mark Office on Saturdays, Sundays or federal holidays within the District of Columbia.

(b) Mail placed in the Patent and Trademark Office pouch up to midnight on weekdays, excepting Saturdays and federal holidays, by the post office at Washington, D.C., serving the Patent and Trademark Office, is considered as having been received in the Patent and Trademark Office on the day it was so placed in the pouch.

(c) In addition to being mailed or delivered by hand during office hours, letters and other papers may be deposited up to midnight in a box provided at the guard's desk at the lobby of building 3 of the Patent and Trademark Office at Crystal Plaza, Arlington, Virginia and at the main entrance (14th Street) of the Department of Commerce Building, Washington, D.C., on weekdays except Saturdays and federal holidays, and all papers deposited therein are considered as received in the Patent and Trademark Office on the day of deposit.

(d) If interruptions or emergencies in the United States Postal Service which have been so designated by the Commissioner occur, the Patent and Trademark Office will consider as filed on a particular date in the Office any paper or fee which is (1) promptly filed after the ending of the designated interruption or emergency and (2) accompanied by a statement indicating that such paper or fee would have been filed on that particular date if it were not for the designated interruption or emergency in the United States Postal Service. Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office.

[24 FR 10332, Dec. 22, 1959, as amended at 34 FR 18857, Nov. 26, 1969; 48 FR 2696, Jan. 20, 1983; effective Feb. 27, 1983]

§ 1.7 Times for taking action: Expiration on Saturday, Sunday or federal holiday.

Whenever periods of time are specified in this part in days, calendar days are intended. When the day, or the last day fixed by statute or by or under this part for taking any action or paying any fee in the Patent and Trademark Office falls on Saturday, Sunday, or on a federal holiday within the District of Columbia, the action may be taken, or the fee paid, on the next succeeding day which is not a Saturday, Sunday, or a federal holiday. See § 1.304 for time for appeal or for commencing civil action.

[48 FR 2696, Jan. 20, 1983; effective Feb. 27, 1983]

§ 1.8 Certificate of mailing.

(a) Except in the cases enumerated below, papers and fees required to be filed in the Patent and Trademark Office within a set period of time will be considered as being timely filed if: (1) they are addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, and deposited with the U.S. Postal Service with sufficient postage as first class mail prior to expiration of the set period, and (2) they also include a certificate for each paper or fee stating the date of deposit. The person signing the certificate should have reasonable basis to expect that the correspondence would be mailed on or before the date indicated. The actual date of receipt of the paper or fee will be used for all other purposes. This procedure does not apply to the following:

(i) The filing of a national patent application specification and drawing or other papers for the purpose of obtaining an application filing date;

(ii) The filing of trademark applications;

(iii) The filing of agreements between parties to an interference under 35 U.S.C. 135(c);

(iv) The filing of an affidavit showing that a mark is still in use or containing an excuse for nonuse under section 8 (a) or (b) or section 12(c) of the Trademark Act, 15 U.S.C. 1058(a), 1058(b), 1062(c);

(v) The filing of an application for renewal of a mark registration under section 9 of the Trademark Act, 15 U.S.C. 1059;

(vi) The filing of a petition to cancel a registration of a mark under section 14 (a) or (b) of the Trademark Act, 15 U.S.C. 1064(a), 1064(b);

(vii) The filing of an affidavit under section 15, subsection (3) of the Trademark Act, 15 U.S.C. 1065;

(viii) The filing of a notice of election to proceed by civil action in an inter partes proceeding under 35 U.S.C. 141 or section 21(a)(1) of the Trademark Act, 15 U.S.C. 1071(a)(1), in response to another party's appeal to the Court of Appeals for the Federal Circuit.

(ix) The filing of a notice and reasons of appeal under 35 U.S.C. 142 or a notice of appeal under section 21(a)(2) of the Trademark Act, 15 U.S.C. 1071(a)(2);

(x) The filing of a statement under 42 U.S.C. 2182 or 42 U.S.C. 2457(c); and

(xi) The filing of international applications for patent and papers relating thereto.

(b) In the event that correspondence or fees are timely filed in accordance with paragraph (a) of this section, but not received in the Patent and Trademark Office, and the application is held to be abandoned or the proceeding dismissed, terminated, or decided with prejudice, the correspondence or fee will be considered timely if the party who forwarded such correspondence or fee (1) informs the Office of the previous mailing of the correspondence or fee promptly after becoming aware of the Office action, (2) supplies an additional copy of the previously mailed correspondence or fee and certificate, and (3) includes a declaration under § 1.68 or § 2.20 which attests on a

personal knowledge basis or to the satisfaction of the Commissioner to the previous timely mailing.

(Pub. L. 94–131, 89 Stat. 685)

[41 FR 43721, Oct. 4, 1976, as amended at 43 FR 20461, May 11, 1978; 47 FR 47380, Oct. 26, 1982, paragraphs (a)(2), and (a)(2)(viii) revised effective Oct. 26, 1982; 48 FR 2696, Jan. 20, 1983, paragraph (a)(i) revised effective Feb. 27, 1983]

§ 1.9 Definitions.

(a) A national application as used in this chapter means a U.S. national application for patent which was either filed in the Office under 35 U.S.C. 111 or which resulted from an international application after compliance with 35 U.S.C. 371.

(b) An international application as used in this chapter means an international application for patent filed under the Patent Cooperation Treaty prior to entering national processing at the Designated Office stage.

(c) An independent inventor as used in this chapter means any inventor who (1) has not assigned, granted, conveyed, or licensed, and (2) is under no obligation under contract or law to assign, grant, convey, or license, any rights in the invention to any person who could not likewise be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization under this section.

(d) A small business concern as used in this chapter means any business concern as defined by the Small Business Administration in 13 CFR 121.3–18, published on September 30, 1982 at 47 FR 43273. For the convenience of the users of these regulations, that definition states:

§ 121.3–18 Definition of small business for paying reduced patent fees under Title 35, U.S. Code

(a) Pursuant to Pub. L. 97–247, a small business concern for purposes of paying reduced fees under 35 U.S. Code 41 (a) and (b) to the Patent and Trademark Office means any business concern (1) whose number of employees, including those of its affiliates, does not exceed 500 persons and (2) which has not assigned, granted, conveyed, or licensed, and is under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor if that person had made the invention, or to any concern which would not qualify as a small business concern or a nonprofit organization under this section. For the purpose of this section concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both. The number of employees of the business concern is the average over the fiscal year of the persons employed during each of the pay periods of the fiscal year. Employees are those persons employed on a full-time, part-time or temporary basis during the previous fiscal year of the concern.

(b) If the Patent and Trademark Office determines that a concern is not eligible as a small business concern within this section, the concern shall have a right to appeal that determination to the Small Business Administration. The Patent and Trademark Office shall transmit its written decision and the pertinent size determination file to the SBA in the event of such adverse determination and size appeal. Such appeals by concerns should be submitted to the SBA at 1441 L Street, NW., Washington, D.C. 20416 (Attention: SBA Office of General Counsel). The appeal should state the basis upon which it is claimed that the Patent and Trademark Office initial size determination on the concern was in error; and the facts and arguments supporting the concern's claimed status as a small business concern under this section.

(e) A nonprofit organization as used in this chapter means (1) a university or other institution of higher education located in any country; (2) an organization of the type described in section 501(c)(3) of the Internal Revenue Code of 1954 (26 U.S.C. 501(c)(3)) and exempt from taxation under section 501(a) of the Internal Revenue Code (26 U.S.C. 501(a)); (3) any nonprofit scientific or educational organization qualified under a nonprofit organization statute of a state of this country (35 U.S.C. 201(i)); or (4) any nonprofit organization located in a foreign country which would qualify as a nonprofit organization under paragraphs (e)(2) or (3) of this section if it were located in this country.

(f) A small entity as used in this chapter means an independent inventor, a small business concern or a nonprofit organization.

(Pub. L. 94–131, 89 Stat. 685)

[43 FR 20461, May 11, 1978; 47 FR 40134, Sept. 10, 1982; 47 FR 43272, Sept. 30, 1982; effective Oct. 1, 1982]

§ 1.10 Filing of papers and fees by "Express Mail" with certificate.

(a) Any paper or fee to be filed in the Patent and Trademark Office can be filed utilizing the "Express Mail Post Office to Addressee" service of the United States Postal Service and be considered as having been filed in the Office on the date the paper or fee is shown to have been deposited as "Express Mail" with the United States Postal Service.

(b) Any paper or fee filed by "Express Mail" must have the number of the "Express Mail" mailing label placed thereon prior to mailing, be addressed to the Commissioner of Patents and Trademarks,

Washington, D.C. 20231, and any such paper or fee must also include a certificate of mailing by "Express Mail" which states the date of mailing by "Express Mail" and is signed by the person mailing the paper or fee.

(c) The Patent and Trademark Office will accept the certificate of mailing by "Express Mail" and accord the paper or fee the certificate date under 35 U.S.C. 21(a) without further proof of the date on which the mailing by "Express Mail" occurred unless a question is present regarding the date of mailing. If more than a reasonable time has elapsed between the certificate date and the Patent and Trademark Office receipt date or if other questions regarding the date of mailing are present, the person mailing the paper or fee may be required to file a copy of the "Express Mail" receipt showing the actual date of mailing and a statement from the person who mailed the paper or fee averring to the fact that the mailing occurred on the date certified. Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office.

[48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

RECORDS AND FILES OF THE PATENT AND TRADEMARK OFFICE

§ 1.11 Files open to the public.

(a) After a patent has been issued, the specification, drawings, and all papers relating to the case in the file of the patent are open to inspection by the general public, and copies may be obtained upon paying the fee therefor. After an award of priority by the Board of Patent Interferences as to all parties, of after termination if no such award is made, the file of any interference which involved a patent, or an application on which a patent has issued, is similarly open to public inspection and procurement of copies. See § 2.27 for trademark files.

(b) All reissue applications and all applications in which the Office has accepted a request filed under § 1.139, and related papers in the application file, are open to inspection by the general public, and copies may be furnished upon paying the fee therefor. The filing of reissue applications will be announced in the *Official Gazette*. The announcement shall include at least the filing date, reissue application and original patent numbers, title, class and subclass, name of the inventor, name of the owner of record, name of the attorney or agent of record, and examining group to which the reissue application is assigned.

(c) All requests for reexamination for which the fee under § 1.20(c) has been paid, will be announced in the *Official Gazette*. Any reexaminations at the initiative of the Commissioner pursuant to § 1.520 will also be announced in the *Official Gazette*. The announcement shall include at least the date of the request, if any, the reexamination request control number or the Commissioner initiated order control number, patent number, title, class and subclass, name of the inventor, name of the patent owner of record, and the examining group to which the reexamination is assigned.

(d) All papers or copies thereof relating to a reexamination proceeding which have been entered of record in the patent or reexamination file are open to inspection by the general public, and copies may be furnished upon paying the fee therefor.

[42 FR 5593, Jan. 28, 1977, as amended at 43 FR 28477, June 30, 1978; 46 FR 29181, May 29, 1981; 47 FR 33086, July 30, 1982, effective Oct. 1, 1982]

§ 1.12 Assignment records open to public inspection.

(a) The assignment records, relating to original or reissue patents, including digests and indexes, and assignment records relating to pending or abandoned trademark applications and to trademark registrations, are open to public inspection and copies of any instrument recorded may be obtained upon request and payment of the fee set forth in § 1.19(a)(5).

(b) Assignment records, digests, and indexes, relating to any pending or abandoned patent application are not available to the public. Copies of any such assignment records and information with respect thereto shall be obtainable only upon written authority of the applicant or applicant's assignee or attorney or agent or upon a showing that the person seeking such information is a bona fide prospective or actual purchaser, mortgagee, or licensee of such application, unless it shall be necessary to the proper conduct of business before the Office or as provided by these rules.

(c) Any request by a member of the public seeking copies of any assignment records of any pending or abandoned patent application preserved in secrecy under § 1.14, or any information with respect thereto, must (1) be in the form of a petition accompanied by the petition fee set forth in § 1.17(i) or (2) include written authority granting access to the member of the public to the particular assignment records from the applicant or applicant's assignee or attorney or agent of record.

(d) An order for a copy of an assignment should give the identification of the record. If identified only by the name of the patentee and number of the patent, or in the case of a trademark registration by the name of the registrant and number of the registration, or by name of the applicant and serial number or international application number of the application, an extra charge as set forth in § 1.21(f) will be made for the time consumed in making a search for such assignment.

[47 FR 33086, July 30, 1982; effective Oct. 1, 1982]

§ 1.13 Copies and certified copies.

(a) Copies of patents and trademark registrations and of any records, books, papers, or drawings belonging to the Patent and Trademark Office and open to the public, will be furnished by the Patent and Trademark Office to any person, and copies of other records or papers will be furnished to persons entitled thereto, upon payment of the fee therefor.

(b) Such copies will be authenticated by the seal of the Patent and Trademark Office and certified by the Commissioner, or in his name attested by an officer of the Patent and Trademark Office authorized by the Commissioner, upon payment of the fee for the authentication certificate in addition to the fee for the copies.

(35 U.S.C. 10)

§ 1.14 Patent applications preserved in secrecy.

(a) Except as provided in § 1.11(b) pending patent applications are preserved in secrecy. No information will be given by the Office respecting the filing by any particular person of an application for a patent, the pendency of any particular case before it, or the subject matter of any particular application, nor will access be given to or copies furnished of any pending application or papers relating thereto, without written authority in that particular application from the applicant or his assignee or attorney or agent of record, unless the application has been identified by serial number in a published patent document or the United States of America has been indicated as a Designated State in a published international application, in which case status information such as whether it is pending, abandoned or patented may be supplied, or unless it shall be necessary to the proper conduct of business before the Office or as provided by this part. Where an application has been patented, the patent number and issue date may also be supplied.

(b) Except as provided in § 1.11(b) abandoned applications are likewise not open to public inspection, except that if an application referred to in a U.S. patent, or in an application which is open to inspection pursuant to § 1.139, is abandoned and is available, it may be inspected or copies obtained by any person on written request, without notice to the applicant. Abandoned applications may be destroyed after 20 years from their filing date, except those to which particular attention has been called and which have been marked for preservation. Abandoned applications will not be returned.

(c) Applications for patents which disclose, or which appear to disclose, or which purport to disclose, inventions or discoveries relating to atomic energy are reported to the Department of Energy, which Department will be given access to such applications, but such reporting does not constitute a determination that the subject matter of each application so reported is in fact useful or an invention or discovery or that such application in fact discloses subject matter in categories specified by sections 151(c) and 151(d) of the Atomic Energy Act of 1954, 68 Stat. 919; 42 U.S.C. 2181 (c) and (d).

(d) Any decision of the Board of Appeals or the Board of Patent Interferences, or any decision of the Commissioner on petition, not otherwise open to public inspection shall be published or made available for public inspection if: (1) The Commissioner believes the decision involves an interpretation of patent laws or regulations that would be of important precedent value; and (2) the applicant, or any party involved in the interference, does not within two months after being notified of the intention to make the decision public, object in writing on the ground that the decision discloses a trade secret or other confidential information. If a decision discloses such information, the applicant or party shall identify the deletions in the text of the decision considered necessary to protect the information. If it is considered the entire decision must be withheld from the public to protect such information, the applicant or party must explain why. Applicants or parties will be given time, not less than twenty days, to request reconsideration and seek court review before any portions of decisions are made public over their objection. See § 2.27 for trademark applications.

(e) Any request by a member of the public seeking access to, or copies of, any pending or abandoned application preserved in secrecy pursuant to paragraphs (a) and (b) of this section, or of any papers relating thereto, must (1) be in the form of a petition and be accompanied by the petition fee set forth in § 1.17(i) or (2) include written authority granting access to the member of the public in that particular application from the applicant or the applicant's assignee or attorney or agent of record.

(Pub. L. 94–131, 89 Stat. 685)

[24 FR 10332, Dec. 22, 1959, as amended at 42 FR 5593, Jan. 28, 1977; 43 FR 20462, May 11, 1978; 47 FR 33086, July 30, 1982, effective Oct. 1, 1982]

§ 1.15 Requests for identifiable records.

(a) Requests for records not disclosed to the public as part of the regular informational activity of the Patent and Trademark Office and which are not otherwise dealt with in the rules in this part may be made by completing Form CD-244, "Application to Inspect Department Records," and submitting this form, in person or by mail, to the Commissioner of Patents and Trademarks, Washington, D.C. 20231. A nonrefundable application fee of $2 must accompany each application.

Copies of Form CD-244 are available in the Central Reference and Records Inspection Facility, Room 2122, Department of Commerce Building, Washington, D.C. 20230, the search room of the Patent Reference Branch of the Patent and Trademark Office, the search room of the Trademark Examining Operation, and in many public information offices and field offices of the Department of Commerce. If the requested record is identifiable, the request will be reviewed by the appropriate official authorized to make an initial determination of the availability of the record. If it is determined that the material is not to be made available to the requesting person, said person shall be notified in writing of that fact and the reasons why the record will not be disclosed. If the record is to be made available, inspection will be permitted in the appropriate Patent and Trademark Office search room. Fees for copies of records and for searches and related services are payable in accordance with the schedule of fees and charges established in § 4.8 of Title 15, Code of Federal Regulations.

(b) Any person whose application to inspect a record has been refused may request a reconsideration of the initial denial by completing and submitting the appropriate section of the Form CD-244. The request for reconsideration should be made within 30 days of the date of the original denial. In submitting such request the party should include any written argument he desires to support his belief that the record requested should be made available. No personal appearance, oral argument, or hearing shall be permitted. The decision upon such request shall be made by the Commissioner of Patents and Trademarks and shall be based upon the original request, the denial, and any written argument submitted by the person seeking access to the record. The decision upon review shall be promptly made in writing and communicated to the person seeking access. If the decision is wholly or partly in favor of availability, the requested record to such extent shall be made available for inspection as described in paragraph (a) of this section. To the extent that the decision is adverse to the request, the reasons for the denial shall be stated. A decision upon review completed as provided herein shall constitute the final decision and action of the Patent and Trademark Office as to the availability of a requested record, except as may be required by court proceedings initiated pursuant to 5 U.S.C. 552(a)(3). Reconsiderations resulting in final decisions as prescribed herein shall be indexed and made available in the search room of the Patent Reference Branch.

(c) Procedures applicable in the event of a subpoena, order, or other compulsory process or demand of a court or other authority shall be those set forth in section 7 of Department Order 64 (32 FR 9734, July 4, 1967).

(Sec. 1, 66 Stat. 793, 81 Stat. 54; 5 U.S.C. 552, 35 U.S.C. 6)

[32 FR 13812, Oct. 4, 1967, as amended at 34 FR 18857, Nov. 26, 1969]

§ 1.16 National application filing fees.

(a)	Basic fee for filing each application for an original patent, except design or plant cases:	
	By a small entity (§ 1.9(f))	$ 150.00
	By other than a small entity	$ 300.00
(b)	In addition to the basic filing fee in an original application, for filing or later presentation of each independent claim in excess of 3:	
	By a small entity (§ 1.9(f))	$ 15.00
	By other than a small entity	$ 30.00
(c)	In addition to the basic filing fee in an original application, for filing or later presentation of each claim (whether independent or dependent) in excess of 20 (Note that § 1.75(c) indicates how multiple dependent claims are considered for fee calculation purposes.):	
	By a small entity (§ 1.9(f))	$ 5.00
	By other than a small entity	$ 10.00
(d)	In addition to the basic filing fee in an original application, if the application contains, or is amended to contain, a multiple dependent claim(s), per application:	
	By a small entity (§ 1.9(f))	$ 50.00
	By other than a small entity	$ 100.00
	(If the additional fees required by paragraphs (b), (c) and (d) are not paid on filing or on later presentation of the claims for which the additional fees are due, they must be paid or the claims cancelled by amendment, prior to the expiration of the time period set for response by the Office in any notice of fee deficiency.)	
(e)	Surcharge for filing the basic filing fee or oath or declaration on a date later than the filing date of the application:	
	By a small entity (§ 1.9(f))	$ 50.00
	By other than a small entity	$ 100.00

(f) For filing each design application:
By a small entity (§ 1.9(f)) $ 62.50
By other than a small entity . . . . . $ 125.00

(g) Basic fee for filing each plant application:
By a small entity (§ 1.9(f)) $ 100.00
By other than a small entity . . . . . $ 200.00

(h) Basic fee for filing each reissue application:
By a small entity (§ 1.9(f)) $ 150.00
By other than a small entity . . . . . $ 300.00

(i) In addition to the basic filing fee in a reissue application, for filing or later presentation for each independent claim which is in excess of the number of independent claims in the original patent:
By a small entity (§ 1.9(f)) $ 15.00
By other than a small entity . . . . . $ 30.00

(j) In addition to the basic filing fee in a reissue application, for filing or later presentation of each claim (whether independent or dependent) in excess of 20 and also in excess of the number of claims in the original patent, (Note that § 1.75(c) indicates how multiple dependent claims are considered for fee purposes.):
By a small entity (§ 1.9(f)) $ 5.00
By other than a small entity . . . . . $ 10.00

(Note, see § 1.445 for international application filing and processing fees.).

[47 FR 33086, July 30, 1982, effective Oct. 1, 1982]

§ 1.17 Patent application processing fees.

(a) Extension fee for response within first month pursuant to § 1.136(a):
By a small entity (§ 1.9(f)) $ 25.00
By other than a small entity . . . . . $ 50.00

(b) Extension fee for response within second month pursuant to § 1.136(a):
By a small entity (§ 1.9(f)) $ 75.00
By other than a small entity . . . . . $ 150.00

(c) Extension fee for response within third month pursuant to § 1.136(a):
By a small entity (§ 1.9(f)) $ 175.00
By other than a small entity . . . . . $ 350.00

(d) Extension fee for response within fourth month pursuant to § 1.136(a):
By a small entity (§ 1.9(f)) $ 275.00
By other than a small entity . . . . . $ 550.00

(e) For filing a notice of appeal from the examiner to the Board of Appeals:
By a small entity (§ 1.9(f)) $ 57.50
By other than a small entity . . . . . $ 115.00

(f) In addition to the fee for filing a notice of appeal, for
filing a brief in support of an appeal:
By a small entity (§ 1.9(f)) $ 57.50
By other than a small entity . . . . . $ 115.00

(g) For filing a request for an oral hearing before the Board of Appeals:
By a small entity (§ 1.9(f)) $ 50.00
By other than a small entity . . . . . $ 100.00

(h) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph . . . . $ 120.00
— § 1.47—for filing by other than all the inventors or a person not the inventor
— § 1.48—for correction of inventorship
— § 1.182—for decision on questions not specifically provided for
— § 1.183—to suspend the rules
— § 1.268—for late filing of interference settlement agreement

(i) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph . . . . $ 60.00
— § 1.12—for access to an assignment record
— § 1.14—for access to an application
— § 1.55—for entry of late priority papers
— § 1.102—to make application special
— § 1.103—to suspend action in application
— § 1.177—for divisional reissues to issue separately
— § 1.268—for access to interference settlement agreement
— § 1.312—for amendment after payment of issue fee

— § 1.313—to withdraw an application from issue
— § 1.314—to defer issuance of a patent
— § 1.334—for patent to issue to assignee, assignment recorded late

(j) For filing a petition to institute a public use proceeding under § 1.292 $ 750.00

(k) For processing an application filed with a specification in a non-English language (§ 1.52(d)) . . . . . $ 20.00

(l) For filing a petition (1) for the revival of an abandoned application under 35 U.S.C. 133, or (2) for delayed payment of the issue fee under 35 U.S.C. 151:
By a small entity (§ 1.9(f)) $ 25.00
By other than a small entity . . . . . $ 50.00

(m) For filing a petition (1) for revival of an unintentionally abandoned application or (2) for the unintentionally delayed payment of the fee for issuing a patent:
By a small entity (§ 1.9(f)) $ 250.00
By other than a small entity . . . . . $ 500.00

[47 FR 33086, July 30, 1982, paragraphs (a)–(m) added effective Oct. 1, 1982; 48 FR 2696, Jan. 20, 1983, paragraph (h) revised effective Feb. 27, 1983]

§ 1.18 Patent issue fees.

(a) Issue fee for issuing each original or reissue patent, except a design or plant patent:
By a small entity (§ 1.9(f)) $ 250.00
By other than a small entity . . . . . $ 500.00

(b) Issue fee for issuing a design patent:
By a small entity (§ 1.9(f)) $ 87.50
By other than a small entity . . . . . $ 175.00

(c) Issue fee for issuing a plant patent:
By a small entity (§ 1.9(f)) $ 125.00
By other than a small entity . . . . . $ 250.00

[47 FR 33086, July 30, 1982, effective Oct. 1, 1982]

§ 1.19 Document supply fees.

The Patent and Trademark Office will supply copies of the following documents upon payment of the fees indicated:

(a) Uncertified copies of Office documents:
(1) Printed copy of a patent, including a design patent, or defensive publication document, except color plant patent . . . . . $ 1.00
(2) Printed copy of a plant patent in color . $ 8.00
(3) Copy of patent application as filed, each 50 pages or fraction thereof . . . . . $ 18.00
(4) Copy of patent file wrapper and contents, each 100 pages or fraction thereof . . . . . $ 30.00
(5) Copy of Office records, except as provided in paragraphs (a)(1) through (4) of this section, per page . . . . $ 0.30
(6) Microfiche copy of microfiche, per microfiche . . . . . $ 2.00

(b) Certified copies of Office documents:
(1) For certifying Office records, per certificate $ 3.50
(2) For a search of assignment records, abstract of title and certification, per patent . . . . . $ 12.00
(3) For comparing copies not prepared by the Office with the original, prior to certification of the copies, per page . . $ 0.10

(c) Subscription services:
(1) Subscription orders for printed copies of patents as issued, annual service charge for entry of order and one subclass . $ 4.00
(2) For annual subscription to each additional subclass in addition to the one covered by the fee under paragraph (c)(1) of this section, per subclass . . . . . $ 0.40

(d) Library service (35 U.S.C. 13):
For providing to libraries copies of all patents issued annually, per annum . . . . . $ 50.00

(e) Lists of patents in subclass:
(1) For list of all United States patents in a subclass, per 100 patent numbers or fraction thereof . . . . . $ 2.00
(2) For list of United States patents in a subclass limited by date or patent number, per 50 patent numbers or fraction thereof . . . . . $ 2.00

[47 FR 33086, July 30, 1982, effective Oct. 1, 1982]

§ 1.20 Post-issuance fees.

(a) For providing a certificate of correction of applicant's mistake (§ 1.323) . . . . . $ 40.00

(b) Petition for correction of inventorship in patent (§ 1.324) . . . . . $ 120.00

(c) For filing a request for reexamination (§ 1.510(a)) $1,500.00

(d) For filing each statutory disclaimer (§ 1.321):
By a small entity (§ 1.9(f)) $ 25.00
By other than a small entity . . . . . $ 50.00

(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after December 12, 1980 and before August 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . $ 200.00

(f) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after December 12, 1980 and before August 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant . $ 400.00

(g) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after December 12, 1980 and before August 27, 1982, in force beyond 12 years; the fee is due by eleven years and six months after the original grant . $ 600.00

(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after August 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§ 1.9(f)) $ 200.00
By other than a small entity . . . . . $ 400.00

(i) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after August 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant:
By a small entity (§ 1.9(f)) $ 400.00
By other than a small entity . . . . . $ 800.00

(j) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after August 27, 1982, in force beyond 12 years; the fee is due by eleven years and six months after the original grant:
By a small entity (§ 1.9(f)) $ 600.00
By other than a small entity $1,200.00

[47 FR 33086, July 30, 1982, effective Oct. 1, 1982]

§ 1.21 Miscellaneous fees and charges.

The Patent and Trademark Office has established the following fees for the services indicated:

(a) Registration of attorneys and agents:
(1) For admission to examination for registration to practice, fee payable upon application . . . . . $ 75.00
(2) On registration to practice . . . . . $ 50.00
(3) For reinstatement to practice . . . . . $ 25.00
(4) For certificate of good standing as an attorney or agent . . . . . $ 10.00

(b) Deposit accounts:
(1) For establishing or reinstating a deposit account . . . . . $ 10.00
(2) Service charge for each month when the balance at the end of the month is below . . $ 40.00
$ 2.00

(c) Disclosure document:
For filing a disclosure document . . . . . $ 10.00

(d) Delivery box:
Local delivery box rental, per annum . . . . . $ 24.00

(e) International-type search reports:
For preparing an international-type search report of an international-type search made at the time of the first action on the merits in a national patent application $ 25.00

(f) Search of Office records:
For searching Patent and Trademark Office records for purposes not otherwise specified, per one-half hour or fraction thereof . . . . . $ 10.00

(g) Copy machine tokens:
Token for copying machine, each . . . . . $ 0.20

(h) Recording of documents:
(1) For recording each assignment, agreement or other paper relating to the property in a patent or application . . . $ 20.00
(2) Where a document to be recorded under paragraph (h) (1) of this section refers to more than one patent or application, for each additional patent or application . $ 5.00

(i) Publication in *Official Gazette*:
For publication in the *Official Gazette* of a notice of the availability of an application or a patent for licensing or sale, each application or patent . . . . . $ 6.00

(j) For a duplicate or replacement of a permanent Office user pass (There is no charge for the first permanent user pass). . . . . $ 5.00

(k) For items and services, that the Commissioner finds may be supplied, for which fees are not specified by statute or by this section, such charges as may be determined by the Commissioner with respect to each such item or service . . . . . actual cost

[47 FR 33086, July 30, 1982; effective Oct. 1, 1982]

§ 1.22 Fees payable in advance.

(a) Patent and trademark fees and charges payable to the Patent and Trademark Office are required to be paid in advance, that is, at the time of requesting any action by the Office for which a fee or charge is payable with the exception that under § 1.53 applications for patent may be assigned a filing date without payment of the basic filing fee.

(b) All patent and trademark fees paid to the Patent and Trademark Office should be itemized in each individual application, patent or other proceeding in such a manner that it is clear for which purpose the fees are paid.

(Pub. L. 94-131, 89 Stat. 685) [43 FR 20462, May 11, 1978]; 48 FR 2696, Jan. 20, 1983; effective Feb. 27, 1983]

§ 1.23 Method of payment.

All payments of money required for Patent and Trademark Office fees, including fees for the processing of international applications (§ 1.445), should be made in U.S. specie, Treasury notes, national bank notes, post office money orders, or by certified check. If sent in any other form, the Office may delay or cancel the credit until collection is made. Money orders and checks must be made payable to the Commissioner of Patents and Trademarks. Remittances from foreign countries must be payable and immediately negotiable in the United States for the full amount of the fee required. Money sent by mail to the Patent and Trademark Office will be at the risk of the sender; letters containing money should be registered.

(Pub. L. 94-131, 89 Stat. 685)
[43 FR 20462, May 11, 1978]

§ 1.24 Coupons.

Coupons in denominations of one dollar are sold by the Patent and Trademark Office for the convenience of regular purchasers of U.S. patents and trademark registrations; these coupons may not be used for any other purpose. The one dollar coupons are sold individually and in books of 50 with stubs for record for $50. These coupons are good until used; they may be transferred but cannot be redeemed.

[30 FR 12844, Oct. 8, 1965, as amended at 34 FR 18857, Nov. 26, 1969, 47 FR 33086, July 30, 1982, effective Oct. 1, 1982; 48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

§ 1.25 Deposit accounts.

(a) For the convenience of attorneys, agents, and the general public in paying any fees due, in ordering services offered by the Office, copies of records, etc., deposit accounts may be established in the Patent and Trademark Office upon payment of the fee for establishing a deposit account (§ 1.21(b)(1)). A minimum deposit of $50 or more, depending on the activity of the individual account, is required. At the close of each month's business, a statement will be rendered. A remittance must be made promptly upon receipt of the statement to cover the value of items or services charged to the account and thus restore the account to its established normal deposit value. An amount sufficient to cover all services, copies, etc., requested must always be on deposit. A service charge (§ 1.21(b)(2)) will be assessed for each month that the balance at the end of the month is below $40.

(b) Filing, issue, appeal, international-type search report, international application processing, petition, and post-issuance fees may be charged against these accounts. A general authorization to charge all fees, or only certain fees, set forth in §§ 1.16 to 1.18 to a deposit account may be filed in an individual application, either for the entire pendency of the application or with respect to a particular paper filed. An authorization to charge to a deposit account the fee for a request for reexamination pursuant to § 1.510 and any other

fees required in a reexamination proceeding in a patent may also be filed with the request for reexamination.

(Pub. L. 94-131, 89 Stat. 685)

[40 FR 57359, Dec. 9, 1975, 43 FR 20462, May 11, 1978; and 47 FR 33086, July 30, 1982, effective Oct. 1, 1982]

§ 1.26 Refunds.

(a) Money paid by actual mistake or in excess, such as a payment not required by law, will be refunded, but a mere change of purpose after the payment of money, as when a party desires to withdraw an application, an appeal, or a request for oral hearing, will not entitle a party to demand such a return. Amounts of one dollar or less will not be returned unless specifically demanded within a reasonable time, nor will the payer be notified of such amount; amounts over one dollar may be returned by check or, if requested, by credit to a deposit account.

(b) [Reserved]

(c) If the Commissioner decides not to institute a reexamination proceeding, a refund of $1,200.00 will be made to the requester of the proceeding. Reexamination requesters should indicate whether any refund should be made by check or by credit to a deposit account.

(35 U.S.C. 6 and 41)

[46 FR 24179, Apr. 30, 1981 and 47 FR 33086, July 30, 1982, effective Oct. 1, 1982]

§ 1.27 Statement of status as small entity.

(a) Any person seeking to establish status as a small entity (§ 1.9(f) of this part) for purposes of paying fees in an application or a patent must file a verified statement in the application or patent prior to or with the first fee paid as a small entity. Such a verified statement need only be filed once in an application or patent and remains in effect until changed.

(b) Any verified statement filed pursuant to paragraph (a) of this section on behalf of an independent inventor must be signed by the independent inventor except as provided in §§ 1.42, 1.43, or 1.47 of this part, and must aver that the inventor qualifies as an independent inventor in accordance with § 1.9(c) of this part. Where there are joint inventors in an application, each inventor must file a verified statement establishing status as an independent inventor in order to qualify as a small entity. Where any rights have been assigned, granted, conveyed, or licensed, or there is an obligation to assign, grant, convey, or license, any rights to a small business concern, a nonprofit organization, or any other individual, a verified statement must be filed by the individual, the owner of the small business concern, or an official of the small business concern or nonprofit organization empowered to act on behalf of the small business concern or nonprofit organization averring to their status.

(c) Any verified statement filed pursuant to paragraph (a) of this section on behalf of a small business concern must (1) be signed by the owner or an official of the small business concern empowered to act on behalf of the concern; (2) aver that the concern qualifies as a small business concern as defined in § 1.9(d); and (3) aver that exclusive rights to the invention have been conveyed to and remain with the small business concern, or if the rights are not exclusive, that all other rights belong to small entities as defined in § 1.9. Where the rights of the small business concern as a small entity are not exclusive, a verified statement must also be filed by the other small entities having rights averring to their status as such.

(d) Any verified statement filed pursuant to paragraph (a) of this section on behalf of a nonprofit organization must (1) be signed by an official of the nonprofit organization empowered to act on behalf of the organization; (2) aver that the organization qualifies as a nonprofit organization as defined in § 1.9(e) of this part specifying under which one of § 1.9(e)(1), (e)(2), (e)(3), or (e)(4) of this part the organization qualifies; and (3) aver that exclusive rights to the invention have been conveyed to and remain with the organization or if the rights are not exclusive, that all other rights belong to small entities as defined in § 1.9 of this part. Where the rights of the nonprofit organization as a small entity are not exclusive, a verified statement must also be filed by the other small entities having rights averring to their status as such.

[47 FR 40134, Sept. 10, 1982 and 47 FR 43272, Sept. 30, 1982, effective Oct. 1, 1982]

§ 1.28 Effect on fees of failure to establish status, or change status, as a small entity.

(a) The failure to establish status as a small entity (§§ 1.9(f) and 1.27 of this part) in any application or patent prior to paying, or at the time of paying, any fee (1) precludes payment of the fee in the amount established for small entities; and (2) precludes a refund pursuant to § 1.26 of this part of any portions of fees paid prior to establishing status as a small entity. Status as a small entity is waived for any fee by the failure to establish the status prior to paying, or at the time of paying the fee. Status as a small entity must be specifically established by a verified statement filed in each application or patent in which the status is available and desired, except those applications filed under § 1.60 of this part where the status as a small entity has been established in a parent application and is still proper. Once status as a small entity has been established in an application or patent, the status remains in that application or patent without the filing of a further verified statement pursuant to § 1.27 of this part unless the Office is notified of a

change in status. Status as a small entity in one application or patent does not affect any other application or patent, including applications or patents which are directly or indirectly dependent upon the application or patent in which the status has been established, except those filed under § 1.60 of this part. Applications filed under § 1.60 of this part must include a reference to a verified statement in a parent application if status as a small entity is still proper and desired.

(b) Once status as a small entity has been established in an application or patent, fees as a small entity may thereafter be paid in that application or patent without regard to a change in status until the issue fee is due or any maintenance fee is due. Notification of any change in status resulting in loss of entitlement to small entity status must be filed in the application or patent prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate pursuant to § 1.9 of this part. The notification of change in status may be signed by the applicant, any person authorized to sign on behalf of the assignee, or an attorney or agent of record or acting in a representative capacity pursuant to § 1.34(a) of this part.

(c) If status as a small entity is established in good faith, and fees as a small entity are paid in good faith, in any application or patent, and it is later discovered that such status as a small entity was established in error or that through error the Office was not notified of a change in status as required by paragraph (b) of this section, the error will be excused (1) if any deficiency between the amount paid and the amount due is paid within three months after the date the error occurred or (2) if any deficiency between the amount paid and the amount due is paid more than three months after the date the error occurred and the payment is accompanied by a verified statement explaining how the error in good faith occurred and how and when it was discovered.

(d)(1) Any attempt to fraudulently (i) establish status as a small entity or (ii) pay fees as a small entity shall be considered as a fraud practiced or attempted on the Office. (2) Improperly and through gross negligence (i) establishing status as a small entity or (ii) paying fees as a small entity shall be considered as a fraud practiced or attempted on the Office. See §§ 1.56(d) and 1.555 of this part.

[47 FR 40134, Sept. 10, 1982, effective Oct. 1, 1982]

Subpart B—National Processing Provisions

PROSECUTION OF APPLICATION AND APPOINTMENT OF ATTORNEY OR AGENT

§ 1.31 Applicants may be represented by an attorney or agent.

An applicant for patent may file and prosecute his own case, or he may be represented by an attorney or agent authorized to practice before the Patent and Trademark Office in patent cases. The Patent and Trademark Office cannot aid in the selection of an attorney or agent.

§ 1.32 Prosecution by assignee.

The assignee of record of the entire interest in an application for patent is entitled to conduct the prosecution of the application to the exclusion of the inventor.

§ 1.33 Correspondence respecting patent applications, reexamination proceedings, and other proceedings.

(a) The residence and post office address of the applicant must appear in the oath or declaration if not stated elsewhere in the application. The applicant may also specify and an attorney or agent of record may specify a correspondence address to which communications about the application are to be directed. All notices, official letters, and other communications in the case will be directed to the correspondence address or, if no such correspondence address is specified, to an attorney or agent of record (see § 1.34(b)), or, if no attorney or agent is of record, to the applicant, or to any assignee of record of the entire interest if the applicant or such assignee so requests, or to an assignee of an undivided part if the applicant so requests, at the post office address of which the Office has been notified in the case. Amendments and other papers filed in the application must be signed: (1) By the applicant, or (2) if there is an assignee of record of an undivided part interest, by the applicant and such assignee, or (3) if there is an assignee of record of the entire interest, by such assignee, or (4) by an attorney or agent of record, or (5) by a registered attorney or agent not of record who acts in a representative capacity under the provisions of § 1.34(a). Double correspondence with an applicant and his attorney or agent, or with more than one attorney or agent, will not be undertaken. If more than one attorney or agent be made of record and a correspondence address has not been specified, correspondence will be held with the one last made of record.

(b) An applicant who has not made of record a registered attorney or agent may be required to state whether he received assistance in the preparation or prosecution of his application, for which any compensation or consideration was given or charged, and if so, to disclose the name or names of the person or persons providing such assistance. This includes the preparation for the applicant of the specification and amendments or other papers to be filed in the Patent and Trademark Office, as well as other assistance in such matters, but does not include merely mak-

ing drawings by draftsmen or stenographic services in typing papers.

(c) All notices, official letters, and other communications for the patent owner or owners in a reexamination proceeding will be directed to the attorney or agent of record (see § 1.34(b)) in the patent file at the address listed on the register of patent attorneys and agents maintained pursuant to §§ 1.341 and 1.347 or, if no attorney or agent is of record, to the patent owner or owners at the address or addresses of record. Amendments and other papers filed in a reexamination proceeding on behalf of the patent owner must be signed by the patent owner, or if there is more than one owner by all the owners, or by an attorney or agent of record in the patent file, or by a registered attorney or agent not of record who acts in a representative capacity under the provisions of § 1.34(a). Double correspondence with the patent owner or owners and the patent owner's attorney or agent, or with more than one attorney or agent, will not be undertaken. If more than one attorney or agent is of record and a correspondence address has not been specified, correspondence will be held with the last attorney or agent made of record.

[36 FR 12617, July 2, 1971, as amended at 46 FR 29181, May 29, 1981]

§ 1.34 Recognition for representation.

(a) When a registered attorney or agent acting in a representative capacity appears in person or signs a paper in practice before the Patent and Trademark Office in a patent case, his or her personal appearance or signature shall constitute a representation to the Patent and Trademark Office that under the provisions of this part and the law, he or she is authorized to represent the particular party in whose behalf he or she acts. In filing such a paper, the attorney or agent should specify his or her registration number with his or her signature. Further proof of authority to act in a representative capacity may be required.

(b) When an attorney or agent shall have filed his or her power of attorney, or authorization, duly executed by the person or persons entitled to prosecute an application or a patent involved in a reexamination proceeding, he or she is a principal attorney of record in the case. A principal attorney or agent, so appointed, may appoint an associate attorney or agent who shall also then be of record.

[46 FR 29181, May 29, 1981]

§ 1.36 Revocation of power of attorney or authorization; withdrawal of attorney or agent.

A power of attorney or authorization of agent may be revoked at any stage in the proceedings of a case, and an attorney or agent may withdraw, upon application to and approval by the Commissioner. An attorney or agent, except an associate attorney or agent whose address is the same as that of the principal attorney or agent, will be notified of the revocation of his or her power of attorney or authorization, and the applicant or patent owner will be notified of the withdrawal of the attorney or agent. An assignment will not of itself operate as a revocation of a power or authorization previously given, but the assignee of the entire interest may revoke previous powers and be represented by an attorney or agent of his or her own selection.

[46 FR 29182, May 29, 1981]

WHO MAY APPLY FOR A PATENT

AUTHORITY: Secs. 1.41 to 1.47 also issued under 35 U.S.C. 111, 116, 117, 118.

§ 1.41 Applicant for patent.

(a) A patent must be applied for in the name of the actual inventor or inventors. Full names must be stated, including the family name and at least one given name without abbreviation together with any other given name or initial.

(b) Unless the contrary is indicated the word "applicant" when used in these sections refers to the inventor or joint inventors who are applying for a patent, or to the person mentioned in §§ 1.42, 1.43, or 1.47 who is applying for a patent in place of the inventor.

(c) Any person authorized by the applicant may file an application for patent on behalf of the inventor or inventors, but an oath or declaration for the application (§ 1.63) can only be made in accordance with § 1.64.

(d) A showing may be required from the person filing the application that the filing was authorized where such authorization comes into question.

[24 FR 10332, Dec. 22, 1959, 36 FR 12690, July 3, 1971; and 48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

§ 1.42 When the inventor is dead.

In case of the death of the inventor, the legal representative (executor, administrator, etc.) of the deceased inventor may make the necessary oath or declaration, and apply for and obtain the patent. Where the inventor dies during the time intervening between the filing of the application and the granting of a patent thereon, the letters patent may be issued to the legal representative upon proper intervention.

[24 FR 10332, Dec. 22, 1959; 29 FR 18503, Dec. 29, 1964 and 48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

§ 1.43 When the inventor is insane or legally incapacitated.

In case an inventor is insane or otherwise legally incapacitated, the legal representative (guardian, conservator, etc.) of

such inventor may make the necessary oath or declaration, and apply for and obtain the patent.

[24 FR 10332, Dec. 22, 1959; 29 FR 18503, Dec. 29, 1964; and 48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

§ 1.44 Proof of authority.

In the cases mentioned in §§ 1.42 and 1.43, proof of the power or authority of the legal representative must be recorded in the Patent and Trademark Office or filed in the application before the grant of a patent.

§ 1.45 Joint inventors.

Joint inventors must apply for a patent jointly and each must make the required oath or declaration: neither of them alone, nor less than the entire number, can apply for a patent for an invention invented by them jointly, except as provided in § 1.47.

[24 FR 10332, Dec. 22, 1959; 29 FR 18503, Dec. 29, 1964; 47 FR 33086, July 30, 1982 and 48 FR 2696, Jan. 20, 1983; effective Feb. 27, 1983]

§ 1.46 Assigned inventions and patents.

In case the whole or a part interest in the invention or in the patent to be issued is assigned, the application must still be made or authorized to be made, and an oath or declaration signed, by the inventor or one of the persons mentioned in §§ 1.42, 1.43, or 1.47. However, the patent may be issued to the assignee or jointly to the inventor and the assignee as provided in § 1.334.

[48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

§ 1.47 Filing when an inventor refuses to sign or cannot be reached.

(a) If a joint inventor refuses to join in an application for patent or cannot be found or reached after diligent effort, the application may be made by the other inventor on behalf of himself or herself and the omitted inventor. The oath or declaration in such an application must be accompanied by a petition including proof of the pertinent facts and by the required fee (§ 1.17(h)) and must state the last known address of the omitted inventor. The Patent and Trademark Office shall forward notice of the filing of the application to the omitted inventor at said address. Should such notice be returned to the Office undelivered, or should the address of the omitted inventor be unknown, notice of the filing of the application shall be published in the *Official Gazette*. The omitted inventor may subsequently join in the application on filing an oath or declaration of the character required by § 1.63. A patent may be granted to the inventor making the application, upon a showing satisfactory to the Commissioner, subject to the same rights which the omitted inventor would have had if he or she had been joined.

(b) Whenever an inventor refuses to execute an application for patent, or cannot be found or reached after diligent effort, a person to whom the inventor has assigned or agreed in writing to assign the invention or who otherwise shows sufficient proprietary interest in the matter justifying such action may make application for patent on behalf of and as agent for the inventor. The oath or declaration in such an application must be accompanied by a petition including proof of the pertinent facts and a showing that such action is necessary to preserve the rights of the parties or to prevent irreparable damage, and by the required fee (§ 1.17(h)) and must state the last known address of the inventor. The assignment, written agreement to assign or other evidence of proprietary interest, or a verified copy thereof, must be filed in the Patent and Trademark Office. The Office shall forward notice of the filing of the application to the inventor at the address stated in the application. Should such notice be returned to the Office undelivered, or should the address of the inventor be unknown, notice of the filing of the application shall be published in the *Official Gazette*. The inventor may subsequently join in the application on filing an oath or declaration of the character required by § 1.63. A patent may be granted to the inventor upon a showing satisfactory to the Commissioner.

[24 FR 10332, Dec. 22, 1959; 29 FR 18503, Dec. 29, 1964; 34 FR 18857, Nov. 26, 1969; 47 FR 33086, July 30, 1982; 48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

§ 1.48 Correction of inventorship.

If the correct inventor or inventors are not named in an application for patent through error without any deceptive intention on the part of the actual inventor or inventors, the application may be amended to name only the actual inventor or inventors. Such amendment must be diligently made and must be accompanied by (1) a petition including a statement of facts verified by the original named inventor or inventors establishing when the error without deceptive intention was discovered and how it occurred; (2) an oath or declaration by each actual inventor or inventors as required by § 1.63; (3) the fee set forth in § 1.17(h); and (4) the written consent of any assignee.

[48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

THE APPLICATION

§ 1.51 General requisites of an application.

(a) Applications for patents must be made to the Commissioner of Patents and Trademarks. A complete application comprises:

(1) A specification, including a claim or claims, see §§ 1.71 to 1.77.

(2) An oath or declaration, see §§ 1.63 and 1.68.

(3) Drawings, when necessary, see §§ 1.81 to 1.88.

(4) The prescribed filing fee, see § 1.16.

(b) Applicants are encouraged to file an information disclosure statement. See §§ 1.97 through 1.99.

(c) Applicants may desire and are permitted to file with, or in, the application an authorization to charge, at any time during the pendency of the application, any fees required under any of §§ 1.16 to 1.18 to a deposit account established and maintained in accordance with § 1.25.

[42 FR 5593, Jan. 28, 1977; 47 FR 33086, July 30, 1982, revised paragraph (a) (4) and added paragraph (c) effective Oct. 1, 1982; 48 FR 2696, Jan. 20, 1983, revised paragraphs (a) (2) and (b) effective Feb. 27, 1983]

§ 1.52 Language, paper, writing, margins.

(a) The application, any amendments or corrections thereto, and the oath or declaration must be in the English language except as provided for in § 1.69 and paragraph (d) of this section, or be accompanied by a verified translation of the application and a translation of any corrections or amendments into the English language. All papers which are to become a part of the permanent records of the Patent and Trademark Office must be legibly written, typed, or printed in permanent ink or its equivalent in quality. All of the application papers must be presented in a form having sufficient clarity and contrast between the paper and the writing, typing, or printing thereon to permit the direct reproduction of readily legible copies in any number by use of photographic, electrostatic, photo-offset, and microfilming processes. If the papers are not of the required quality, substitute typewritten or printed papers of suitable quality may be required.

(b) The application papers (specification, including claims, abstract, oath or declaration, and papers as provided for in §§ 1.42, 1.43, 1.47, etc.) and also papers subsequently filed, must be plainly written on but one side of the paper. The size of all sheets of paper should be 8 to 8½ by 10½ to 13 inches (20.3 to 21.6 cm. by 26.6 to 33.0 cm.). A margin of at least approximately one inch (2.5 cm.) must be reserved on the left-hand of each page. The top of each page of the application, including claims must have a margin of at least approximately ¾ inch (2 cm.). The lines of text must not be crowded too closely together; typewritten lines should be 1½ or double spaced. The pages of the application, including claims and abstract, should be numbered consecutively, starting with 1, the numbers being centrally located above or preferably, below, the text.

(c) Any interlineation, erasure, cancellation or other alteration of the application papers filed must be made before the signing of any accompanying oath or declaration pursuant to § 1.63 referring to those application papers and should be dated and initialed or signed by the applicant on the same sheet of paper. No such alterations in the application papers are permissible after the signing of an oath or declaration referring to those application papers (§ 1.56(c)). After the signing of the oath or declaration referring to the application papers, amendments may only be made in the manner provided by §§ 1.121 and 1.123–1.125.

(d) An application including a signed oath or declaration may be filed in a language other than English if it is accompanied by the fee set forth in § 1.17(k). A verified English translation of the non-English language application is required to be filed with the application or within such time as may be set by the Office.

(Pub. L. 94-131, 89 Stat. 685)

[37 FR 21994, Oct. 18, 1972; 43 FR 20462, May 11, 1978; 47 FR 33086, July 30, 1982, revised paragraph (a) and added paragraph (d), effective Oct. 1, 1982; 48 FR 2696, Jan. 20, 1983, revised paragraph (c), effective Feb. 27, 1983]

§ 1.53 Serial number, filing date, and completion of application.

(a) Any application for a patent received in the Patent and Trademark Office will be assigned a serial number for identification purposes.

(b) The filing date of an application for patent is the date on which (1) a specification containing a description pursuant to § 1.71 and at least one claim pursuant to § 1.75, and (2) any drawing required by § 1.81(a), are filed in the Patent and Trademark Office. No new matter may be introduced into an application after its filing date (§ 1.118).

(c) If any application is filed without the specification or drawing required by paragraph (b) of this section, applicant will be so notified and given a time period within which to submit the omitted specification or drawing in order to obtain a filing date as of the date of filing of such submission. If the omission is not corrected within the time period set, the application will be returned or otherwise disposed of; the fee, if submitted, will be refunded less a $50.00 handling fee.

(d) If an application which has been accorded a filing date pursuant to paragraph (b) of this section does not include the appropriate filing fee or an oath or declaration by the applicant, applicant will be so notified and given a period of time within which to file the fee, oath, or declaration and to pay the surcharge as set forth in § 1.16(e) in order to prevent abandonment of the application. The notification pursuant to this paragraph may be made simultaneously with any notifica-

tion pursuant to paragraph (c) of this section.

(e) An application for a patent will not be placed upon the files for examination until all its required parts, complying with the rules relating thereto, are received, except that certain minor informalities may be waived subject to subsequent correction whenever required.

(f) The filing date of an international application designating the United States of America shall be treated as the filing date in the United States of America under PCT Article 11(3), except as provided in 35 U.S.C. 102(e).

[48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

§ 1.54 Parts of application to be filed together; filing receipt.

(a) It is desirable that all parts of the complete application be deposited in the Office together; otherwise a letter must accompany each part, accurately and clearly connecting it with the other parts of the application. See § 1.53 with regard to completion of an application.

(b) Applicant will be informed of the application serial number and filing date by a filing receipt.

[48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

§ 1.55 Claim for foreign priority.

(a) An applicant may claim the benefit of the filing date of a prior foreign application under the conditions specified in 35 U.S.C. 119 and 172. The claim to priority need be in no special form and may be made by the attorney or agent if the foreign application is referred to in the oath or declaration as required by § 1.63. The claim for priority and the certified copy of the foreign application specified in the second paragraph of 35 U.S.C. 119 must be filed in the case of interference (§ 1.224); when necessary to overcome the date of a reference relied upon by the examiner; or when specifically required by the examiner; and in all other cases they must be filed not later than the date the issue fee is paid. If the papers filed are not in the English language, a translation need not be filed except in the three particular instances specified in the preceding sentence, in which event a sworn translation or a translation certified as accurate by a sworn or official translator must be filed. If the priority papers are submitted after the date the issue fee is paid, they must be accompanied by a petition requesting their entry and the fee set forth in § 1.17(i).

(b) An applicant may under certain circumstances claim priority on the basis of an application for an inventor's certificate in a country granting both inventor's certificates and patents. When an applicant wishes to claim the right of priority as to a claim or claims of the application on the basis of an application for an inventor's certificate in such a country under 35 U.S.C. 119, last paragraph (as amended July 28, 1972), the applicant or his attorney or agent, when submitting a claim for such right as specified in paragraph (b) of this section, shall include an affidavit or declaration including a specific statement that, upon an investigation, he or she has satisfied himself or herself that to the best of his or her knowledge the applicant, when filing his or her application for the inventor's certificate, had the option to file an application either for a patent or an inventor's certificate as to the subject matter of the identified claim or claims forming the basis for the claim of priority.

(35 U.S.C. 119; Pub. L. 94-131, 89 Stat. 685)

[24 FR 10332, Dec. 22, 1959; 34 FR 12629, Aug. 2, 1969; 34 FR 18857, Nov. 26, 1969; 38 FR 9297, Apr. 13, 1973; 43 FR 20463, May 11, 1978; 47 FR 33086, July 30, 1982; 48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

§ 1.56 Duty of disclosure; fraud; striking or rejection of applications.

(a) A duty of candor and good faith toward the Patent and Trademark Office rests on the inventor, on each attorney or agent who prepares or prosecutes the application and on every other individual who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application. All such individuals have a duty to disclose to the Office information they are aware of which is material to the examination of the application. Such information is material where there is substantial likelihood that a reasonable examiner would consider it important in deciding whether to allow the application to issue as a patent. The duty is commensurate with the degree of involvement in the preparation or prosecution of the application.

(b) Disclosures pursuant to this section may be made to the Office through an attorney or agent having responsibility for the preparation or prosecution of the application or through an inventor who is acting in his own behalf. Disclosure to such an attorney, agent or inventor shall satisfy the duty, with respect to the information disclosed, of any other individual. Such an attorney, agent or inventor has no duty to transmit information which is not material to the examination of the application.

(c) Any application may be stricken from the files if:

(1) An oath or declaration pursuant to § 1.63 is signed in blank;

(2) An oath or declaration pursuant to § 1.63 is signed without review thereof by the person making the oath or declaration;

(3) An oath or declaration pursuant to § 1.63 is signed without review of the specification, including the claims, as required by § 1.63(b);

or

(4) The application papers filed in the Office are altered after the signing of an oath or declaration pursuant to § 1.63 referring to those application papers.

(d) No patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or gross negligence. The claims in an application shall be rejected if upon examination pursuant to 35 U.S.C. 131 and 132, it is established by clear and convincing evidence (1) that any fraud was practiced or attempted on the Office in connection with the application, or in connection with any previous application upon which the application relies, or (2) that there was any violation of the duty of disclosure through bad faith or gross negligence in connection with the application, or in connection with any previous application upon which the application relies.

(e) The examination of an application for compliance with paragraph (d) of this section will normally be delayed until such time as (1) all other matters are resolved, or (2) appellant's reply brief pursuant to § 1.193(b) has been received and the application is otherwise prepared for consideration by the Board of Appeals, at which time the appeal will be suspended for examination pursuant to paragraph (d) of this section. The prosecution of the application will be reopened to the extent necessary to conduct the examination pursuant to paragraph (d) of this section including any appeal pursuant to § 1.191. If an appeal has already been filed based on a rejection on other grounds, any further rejection under this section shall be treated in accordance with § 1.193(c).

(f) Any member of the public may seek to have an application stricken from the files pursuant to paragraph (c) of this section by filing a timely petition to strike the application from the files. Any such timely petition and any accompanying papers will be entered in the application file if the petition and accompanying papers (1) specifically identify the application to which the petition is directed, and (2) are either served upon the applicant in accordance with § 1.248, or filed with the Office in duplicate in the event service is not possible. Any such petition filed by an attorney or agent must be in compliance with § 1.346.

(g) A petition to strike an application from the files submitted in accordance with the second sentence of paragraph (f) of this section will be considered by the Office. An acknowledgement of the entry of such a petition in a reissue application file will be sent to the member of the public filing the petition. A member of the public filing such a petition in an application for an original patent will not receive any communications from the Office relating to the petition, other than the return of a self-addressed postcard which the member of the public may include with the petition in order to receive an acknowledgement by the Office that the petition has been received. The Office will communicate with the applicant regarding any such petition entered in the application file and may require the applicant to respond to the Office on matters raised by the petition. The active participation of the member of the public filing a petition pursuant to paragraph (f) of this section ends with the filing of the petition and no further submission on behalf of the petitioner will be acknowledged or considered unless such submission raises new issues which could not have been earlier presented, and thereby constitutes a new petition.

(h) Any member of the public may seek to have the claims in an application rejected pursuant to paragraph (d) of this section by filing a timely protest in accordance with § 1.291. Any such protest filed by an attorney or agent must be in compliance with § 1.346.

(i) The Office may require applicant to supply information pursuant to paragraph (a) of this section in order for the Office to decide any issues relating to paragraphs (c) and (d) of this section which are raised by a petition or a protest, or are otherwise discovered by the Office.

[42 FR 5593, Jan. 28, 1977; FR 21751, May 19, 1982; and 48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

§ 1.57 [Removed]

(35 U.S.C. 6, Pub. L. 94-131, 89 Stat. 685)

[43 FR 20463, May 11, 1978; 48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

§ 1.58 Chemical and mathematical formulas and tables.

(a) The specification, including the claims, may contain chemical and mathematical formulas, but shall not contain drawings or flow diagrams. The description portion of the specification may contain tables; claims may contain tables either if necessary to conform to 35 U.S.C. 112 or if otherwise found to be desirable.

(b) All tables and chemical and mathematical formulas in the specification, including claims, and amendments thereto, must be on paper which is flexible, strong, white, smooth, nonshiny, and durable in order to permit use as camera copy when printing any patent which may issue. A good grade of bond paper is acceptable; watermarks should not be prominent. India ink or its equivalent, or solid black typewriter, should be used to secure perfectly black solid lines.

(c) To facilitate camera copying when printing, the width of formulas and tables as presented should be limited normally to 5 inches (12.7 cm.) so that it may appear as a single column in the printed patent. If it is not possible to limit the width

of a formula or table to 5 inches (12.7 cm.), it is permissible to present the formula or table with a maximum width of 10¼ inches (27.3 cm.) and to place it sideways on the sheet. Typewritten characters used in such formulas and tables must be from a block (nonscript) type font or lettering style having capital letters which are at least 0.08 inch (2.1 mm.) high (e.g., elite type). Hand lettering must be neat, clean, and have a minimum character height of 0.08 inch (2.1 mm.). A space at least ¼ inch (6.4 mm.) high should be provided between complex formulas and tables and the text. Tables should have the lines and columns of data closely spaced to conserve space, consistent with high degree of legibility.

(Pub. L. 94-131, 89 Stat. 685)

[43 FR 20463, May 11, 1978]

§ 1.59 Papers of application with filing date not to be returned.

Papers in an application which has received a filing date pursuant to § 1.53 will not be returned for any purpose whatever. If applicants have not preserved copies of the papers, the Office will furnish copies at the usual cost.

[36 FR 9775, May 28, 1971; 48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

§ 1.60 Continuation or divisional application for invention disclosed in a prior application.

A continuation or divisional application (filed under the conditions specified in 35 U.S.C. 120 or 121), which discloses and claims only subject matter disclosed in a prior application may be filed as a separate application before the patenting or abandonment of or termination of proceedings on the prior application. Signing and execution of the application papers by the applicant may be omitted provided the copy is supplied by and accompanied by a statement by, the applicant or his or her attorney or agent that the application papers comprise a true copy of the prior application as filed. Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. Only amendments reducing the number of claims or adding a reference to the prior application (§ 1.78(a)) will be entered before calculating the filing fee and granting the filing date.

[36 FR 12690, July 3, 1971 and 48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

§ 1.61 Filing of applications in the United States of America as a Designated Office.

(a) To maintain the benefit of the international filing date and obtain an examination as to the patentability of the invention in the United States, the applicant shall furnish to the U.S. Patent and Trademark Office not later than the expiration of 20 months from the priority date: (1) A copy of the international application with any amendments, unless it has been previously furnished by the International Bureau or unless it was originally filed in the U.S. Patent and Trademark Office; (2) a verified translation of the international application and a translation of any amendments into the English language, if originally filed elsewhere in another language; (3) the national fee (see § 1.445(a)(4)); and (4) an oath or declaration of the inventor (see § 1.70).

(b) Where an International Searching Authority has made a declaration that no international search report will be established because the international application relates to subject matter which it is not required to search, or because the application fails to comply with the prescribed requirements to such an extent that a meaningful search could not be carried out, the time for performing the acts referred to in paragraph (a) of this section is 2 months from the mailing date of the declaration to the applicant.

(Pub. L. 94-131, 89 Stat. 685)

[43 FR 20463, May 11, 1978]

§ 1.62 File wrapper continuing procedure.

(a) A continuation, continuation-in-part, or divisional application, which uses the specification and drawings from a prior application to be abandoned, may be filed before the payment of the issue fee, abandonment of, or termination of proceedings on a prior application. The filing date of an application filed under this section is the date on which a request is filed for an application under this section including identification of the Serial Number, filing date, and applicant's name of the prior application.

(b) The filing fee for a continuation, continuation-in-part, or divisional application under this section is based on the number of claims remaining in the application after entry of any preliminary amendment and entry of any amendments under § 1.116 unentered in the prior application which applicant has requested to be entered in the continuing application.

(c) In the case of a continuation-in-part application which adds and claims additional disclosure by amendment, an oath or declaration as required by § 1.63 must also be filed. In a continuation or divisional application which discloses and claims only subject matter disclosed in a prior application, no additional oath or declaration is required.

(d) If an application which has been accorded a filing date pursuant to paragraph (a) of this section does not include the appropriate filing fee pursuant to paragraph (b) of this section, or an oath or declaration by the applicant in the case of a continuation-in-part application pursuant to paragraph (c) of this section, ap-

plicant will be so notified and given a period of time within which to file the fee, oath, or declaration and to pay the surcharge as set forth in § 1.16(e) in order to prevent abandonment of the application. The notification pursuant to this paragraph may be made simultaneously with any notification of a defect pursuant to paragraph (a) of this section.

(e) An application filed under this section will utilize the file wrapper and contents of the prior application to constitute the new continuation, continuation-in-part, or divisional application but will be assigned a new application serial number.

(f) The filing of an application under this section will be construed to include a waiver of secrecy by the applicant under 35 U.S.C. 122 to the extent that any member of the public who is entitled under the provisions of 37 CFR 1.14 to access to, or information concerning either the prior application or any continuing application filed under the provisions of this section may be given similar access to, or similar information concerning, the other application(s) in the file wrapper.

(g) The filing of a request for a continuing application under this section will be considered to be a request to expressly abandon the prior application as of the filing date granted the continuing application.

(h) The applicant is urged to furnish the following information relating to the prior application to the best of his or her ability:

(1) Title as originally filed and as last amended;

(2) Name of applicant as originally filed and as last amended;

(3) Current correspondence address of applicant;

(4) Identification of prior foreign application and any priority claim under 35 U.S.C. 119.

(i) Envelopes containing only application papers and fees for filing under this section should be marked "Box FWC".

[47 FR 47242, Oct. 25, 1982 and 48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

§ 1.63 Oath or declaration.

(a) An oath or declaration filed under § 1.51(a) (2) as a part of an application must:

(1) Be executed in accordance with either § 1.66 or § 1.68;

(2) Identify the specification to which it is directed;

(3) Identify each inventor and the residence and country of citizenship of each inventor; and

(4) State whether the inventor is a sole or joint inventor of the invention claimed.

(b) In addition to meeting the requirements of paragraph (a), the oath or declaration must state that the person making the oath or declaration:

(1) Has reviewed and understands the contents of the specification, including the claims, as amended by any amendment specifically referred to in the oath or declaration;

(2) Believes the named inventor or inventors to be the original and first inventor or inventors of the subject matter which is claimed and for which a patent is sought; and

(3) Acknowledges the duty to disclose information which is material to the examination of the application in accordance with § 1.56(a).

(c) In addition to meeting the requirements of paragraphs (a) and (b) of this section, the oath or declaration in any application in which a claim for foreign priority is made pursuant to § 1.55 must identify the foreign application for patent or inventor's certificate on which priority is claimed, and any foreign application having a filing date before that of the application on which priority is claimed, by specifying the application number, country, day, month and year of its filing.

(d) In any continuation-in-part application filed under the conditions specified in 35 U.S.C. 120 which discloses and claims subject matter in addition to that disclosed in the prior copending application, the oath or declaration must also state that the person making the oath or declaration acknowledges the duty to disclose material information as defined in § 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

[48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

§ 1.64 Person making oath or declaration.

(a) The oath or declaration must be made by all of the actual inventors except as provided for in §§ 1.42, 1.43, or 1.47.

(b) If the person making the oath or declaration is not the inventor (§§ 1.42, 1.43, or 1.47), the oath or declaration shall state the relationship of the person to the inventor and, upon information and belief, the facts which the inventor is required to state.

[48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

§ 1.65 [Removed]

[29 FR 18503 Dec. 29, 1964, 34 FR 18857, Nov. 26, 1969; 42 FR 5594, Jan. 28, 1977 and 48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

§ 1.66 Officers authorized to administer oaths.

(a) The oath or affirmation may be made before any person within the United States authorized by law to administer oaths. An oath made in a foreign country may be made before any diplomatic or consular officer of the United States au-

thorized to administer oaths, or before any officer having an official seal and authorized to administer oaths in the foreign country in which the applicant may be, whose authority shall be proved by a certificate of a diplomatic or consular officer of the United States, or by an apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States. The oath shall be attested in all cases in this and other countries, by the proper official seal of the officer before whom the oath or affirmation is made. Such oath or affirmation shall be valid as to execution if it complies with the laws of the State or country where made. When the person before whom the oath or affirmation is made in this country is not provided with a seal, his official character shall be established by competent evidence, as by a certificate from a clerk of a court of record or other proper officer having a seal.

(b) When the oath is taken before an officer in a country foreign to the United States, any accompanying application papers, except the drawings, must be attached together with the oath and a ribbon passed one or more times through all the sheets of the application, except the drawings, and the ends of said ribbon brought together under the seal before the latter is affixed and impressed, or each sheet must be impressed with the official seal of the officer before whom the oath is taken. If the papers as filed are not properly ribboned or each sheet impressed with the seal, the case will be accepted for examination, but before it is allowed, duplicate papers, prepared in compliance with the foregoing sentence, must be filed.

[47 FR 33086, July 30, 1982, effective Oct. 1, 1982]

§ 1.67 Supplemental oath or declaration.

(a) A supplemental oath or declaration meeting the requirements of § 1.63 may be required to be filed to correct any deficiencies or inaccuracies present in an earlier filed oath or declaration.

(b) A supplemental oath or declaration meeting the requirements of § 1.63 must be filed (1) when a claim is presented for matter originally shown or described but not substantially embraced in the statement of invention or claims originally presented, and (2) when an oath or declaration submitted in accordance with § 1.53(d) after the filing of the specification and any required drawings specifically and improperly refers to an amendment which includes new matter. No new matter may be introduced into an application after its filing date even if a supplemental oath or declaration is filed (§ 1.53(b); § 1.118). In proper cases the oath or declaration here required may be made on information and belief by an applicant other than inventor.

[24 FR 10332, Dec. 22, 1959, 29 FR 18503, Dec. 29, 1964; 40 FR 6339, Feb. 11, 1975 and 48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

§ 1.68 Declaration in lieu of oath.

Any document to be filed in the Patent and Trademark Office and which is required by any law, rule, or other regulation to be under oath may be subscribed to by a written declaration with the exception of testimony relating to interferences and other contested cases covered by §§ 1.271 to 1.286. Such declaration may be used in lieu of the oath otherwise required, if, and only if, the declarant is on the same document, warned that willful false statements and the like are punishable by fine or imprisonment, or both (18 U.S.C. 1001) and may jeopardize the validity of the application or any patent issuing thereon. The declarant must set forth in the body of the declaration that all statements made of his own knowledge are true and that all statements made on information and belief are believed to be true.

[34 FR 14430, Sept. 16, 1969]

§ 1.69 Foreign language oaths and declarations.

(a) Whenever an individual making an oath or declaration cannot understand English, the oath or declaration must be in a language that such individual can understand and shall state that such individual understands the content of any documents to which the oath or declaration relates.

(b) Unless the text of any oath or declaration in a language other than English is a form provided or approved by the Patent and Trademark Office, it must be accompanied by a verified English translation, except that in the case of an oath or declaration filed under § 1.63, the translation may be filed in the Office no later than two months from the date applicant is notified to file the translation.

[42 FR 5594, Jan. 28, 1977 and 48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

§ 1.70 Oath or declaration under 35 U.S.C. 371(c) (4).

(a) When an applicant of an international application, if the inventor, desires to enter the national stage under 35 U.S.C. 371, he or she must file an oath or declaration in accordance with § 1.63.

(b) If the international application was made as provided in §§ 1.422, 1.423 or 1.425, the applicant shall state his or her relationship to the inventor and, upon information and belief, the facts which the inventor is required by this section to state.

(Pub. L. 94-131, 89 Stat. 685)

[43 FR 20463, May 11, 1978 and 48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

SPECIFICATION

AUTHORITY: Secs. 1.71 to 1.79 also issued under 35 U.S.C. 112.

§ 1.71 Detailed description and specification of the invention.

(a) The specification must include a written description of the invention or discovery and of the manner and process of making and using the same, and is required to be in such full, clear, concise, and exact terms as to enable any person skilled in the art or science to which the invention or discovery appertains, or with which it is most nearly connected, to make and use the same.

(b) The specification must set forth the precise invention for which a patent is solicited, in such manner as to distinguish it from other inventions and from what is old. It must describe completely a specific embodiment of the process, machine, manufacture, composition of matter or improvement invented, and must explain the mode of operation or principle whenever applicable. The best mode contemplated by the inventor of carrying out his invention must be set forth.

(c) In the case of an improvement, the specification must particularly point out the part or parts of the process, machine, manufacture, or composition of matter to which the improvement relates, and the description should be confined to the specific improvement and to such parts as necessarily cooperate with it or as may be necessary to a complete understanding or description of it.

§ 1.72 Title and abstract.

(a) The title of the invention, which should be as short and specific as possible, should appear as a heading on the first page of the specification, if it does not otherwise appear at the beginning of the application.

(b) A brief abstract of the technical disclosure in the specification must be set forth on a separate sheet, preferably following the claims under the heading "Abstract of the Disclosure." The purpose of the abstract is to enable the Patent and Trademark Office and the public generally to determine quickly from a cursory inspection the nature and gist of the technical disclosure. The abstract shall not be used for interpreting the scope of the claims.

(Pub. L. 94-131, 89 Stat. 685)

[31 FR 12922, Oct. 4, 1966, and 43 FR 20464, May 11, 1978]

§ 1.73 Summary of the invention.

A brief summary of the invention indicating its nature and substance, which may include a statement of the object of the invention, should precede the detailed description. Such summary should, when set forth, be commensurate with the invention as claimed and any object recited should be that of the invention as claimed.

§ 1.74 Reference to drawings.

When there are drawings, there shall be a brief description of the several views of the drawings and the detailed description of the invention shall refer to the different views by specifying the numbers of the figures and to the different parts by use of reference letters or numerals (preferably the latter).

§ 1.75 Claim(s).

(a) The specification must conclude with a claim particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention or discovery.

(b) More than one claim may be presented provided they differ substantially from each other and are not unduly multiplied.

(c) One or more claims may be presented in dependent form, referring back to and further limiting another claim or claims in the same application. Any dependent claim which refers to more than one other claim ("multiple dependent claim") shall refer to such other claims in the alternative only. A multiple dependent claim shall not serve as a basis for any other multiple dependent claim. For fee calculation purposes under § 1.16, a multiple dependent claim will be considered to be that number of claims to which direct reference is made therein. For fee calculation purposes, also, any claim depending from a multiple dependent claim will be considered to be that number of claims to which direct reference is made in that multiple dependent claim. In addition to the other filing fees, any original application which is filed with, or is amended to include, multiple dependent claims must have paid therein the fee set forth in § 1.16(d). Claims in dependent form shall be construed to include all the limitations of the claim incorporated by reference into the dependent claim. A multiple dependent claim shall be construed to incorporate by reference all the limitations of each of the particular claims in relation to which it is being considered.

(d)(1) The claim or claims must conform to the invention as set forth in the remainder of the specification and the terms and phrases used in the claims must find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description. (See § 1.58(a).)

(2) See §§ 1.141 to 1.146 as to claiming different inventions in one application.

(e) Where the nature of the case admits, as in the case of an improvement, any independent claim should contain in the following order: (1) A preamble comprising a general description of all the elements or steps of the claimed combination

which are conventional or known, (2) a phrase such as "wherein the improvement comprises," and (3) those elements, steps and/or relationships which constitute that portion of the claimed combination which the applicant considers as the new or improved portion.

(f) If there are several claims, they shall be numbered consecutively in Arabic numerals.

(g) All dependent claims should be grouped together with the claim or claims to which they refer to the extent possible.

[31 FR 12922, Oct. 4, 1966, 36 FR 12690, July 3, 1971; 37 FR 21995, Oct. 18, 1972; 43 FR 4015, Jan. 31, 1978 and 47 FR 33086, July 30, 1982, effective Oct. 1, 1982]

§ 1.77 Arrangement of application elements.

The elements of the application should appear in the following order:

(a) Title of the invention; or an introductory portion stating the name, citizenship, and residence of the applicant, and the title of the invention may be used.

(b) [Reserved]

(c)(1) Cross-reference to related applications, if any.

(2) Reference to a "microfiche appendix" if any. (See § 1.96(b)). The total number of microfiche and total number of frames should be specified.

(d) Brief summary of the invention.

(e) Brief description of the several views of the drawing, if there are drawings.

(f) Detailed description.

(g) Claim or claims.

(h) Abstract of the disclosure.

(i) Signed oath or declaration.

(j) Drawings.

(Pub. L. 94-131, 89 Stat. 685; 35 U.S.C. 6 and 41)

[43 FR 20464, May 11, 1978, 46 FR 2612, Jan. 12, 1981; 48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

§ 1.78 Cross-references to other applications.

(a) When an applicant files an application claiming an invention disclosed in a prior filed copending national application or international application designating the United States of America of the same applicant, the second application must contain or be amended to contain in the first sentence of the specification following the title a reference to such prior application, identifying it by serial number and filing date or international application number and international filing date and indicating the relationship of the applications, if the benefit of the filing date of such prior application is to be claimed. Cross-references to other related applications may be made when appropriate. (See § 1.14(b)).

(b) Where two or more applications filed by the same applicant contain conflicting claims, elimination of such claims from all but one application may be required in the absence of good and sufficient reason for their retention during pendency in more than one application.

(c) Where two or more applications, or an application and a patent naming different inventors and owned by the same party contain conflicting claims, the assignee may be called upon to state which named inventor is the prior inventor. In addition to making said statement, the assignee may also explain why an interference should be declared or that no conflict exists in fact.

(Pub. L. 94-131, 89 Stat. 685)

[31 FR 12922, Oct. 4, 1966; 36 FR 7312, Apr. 17, 1971; 43 FR 20464, May 11, 1978]

§ 1.79 Reservation clauses not permitted.

A reservation for a future application of subject matter disclosed but not claimed in a pending application will not be permitted in the pending application, but an application disclosing unclaimed subject matter may contain a reference to a later filed application of the same applicant or owned by a common assignee disclosing and claiming that subject matter.

THE DRAWINGS

AUTHORITY: Secs. 1.81 to 1.88 also issued under 35 U.S.C. 113.

§ 1.81 Drawings required.

(a) The applicant for a patent is required to furnish a drawing of his invention where necessary for the understanding of the subject matter sought to be patented; this drawing must be filed with the application.

(b) Drawings may include illustrations which facilitate an understanding of the invention (for example, flow sheets in cases of processes, and diagrammatic views).

(c) Whenever the nature of the subject matter sought to be patented admits of illustration by a drawing without its being necessary for the understanding of the subject matter and the applicant has not furnished such a drawing, the examiner will require its submission within a time period of not less than two months from the date of the sending of a notice thereof.

(d) Drawings submitted after the filing date of the application may not be used to overcome any insufficiency of the specification due to lack of an enabling disclosure or otherwise inadequate disclosure therein, or to supplement the original disclosure thereof for the purpose of interpretation of the scope of any claim.

[43 FR 4015, Jan. 31, 1978]

§ 1.83 Content of drawing.

(a) The drawing must show every

feature of the invention specified in the claims. However, conventional features disclosed in the description and claims, where their detailed illustration is not essential for a proper understanding of the invention, should be illustrated in the drawing in the form of a graphical drawing symbol or a labeled representation (e.g. a labeled rectangular box).

(b) When the invention consists of an improvement on an old machine the drawing must when possible exhibit, in one or more views, the improved portion itself, disconnected from the old structure, and also in another view, so much only of the old structure as will suffice to show the connection of the invention therewith.

(c) Where the drawings do not comply with the requirements of paragraphs (a) and (b) of this section, the examiner shall require such additional illustration within a time period of not less than two months from the date of the sending of a notice thereof. Such corrections are subject to the requirements of § 1.81(d).

[31 FR 12923, Oct. 4, 1966 and 43 FR 4015, Jan. 31, 1978]

§ 1.84 Standards for drawings.

(a) *Paper and ink.* Drawings must be made upon paper which is flexible, strong, white, smooth, non-shiny and durable. Two-ply or three-ply bristol board is preferred. The surface of the paper should be calendered and of a quality which will permit erasure and correction with India ink. India ink, or its equivalent in quality, is preferred for pen drawings to secure perfectly black solid lines. The use of white pigment to cover lines is not normally acceptable.

(b) *Size of sheet and margins.* The size of the sheets on which drawings are made may either be exactly 8½ by 14 inches (21.6 by 35.6 cm.) or exactly 21.0 by 29.7 cm. (DIN size A4). All drawing sheets in a particular application must be the same size. One of the shorter sides of the sheet is regarded as its top.

(1) On 8½ by 14 inch drawing sheets, the drawing must include a top margin of 2 inches (5.1 cm.) and bottom and side margins of ¼ inch (6.4 mm.) from the edges, thereby leaving a "sight" precisely 8 by 11¾ inches (20.3 by 29.8 cm.). Margin border lines are not permitted. All work must be included within the "sight". The sheets may be provided with two ¼ inch (6.4 mm.) diameter holes having their centerlines spaced 11/16 inch (17.5 mm.) below the top edge and 2¾ inches (7.0 cm.) apart, said holes being equally spaced from the respective side edges.

(2) On 21.0 by 29.7 cm. drawing sheets, the drawing must include a top margin of at least 2.5 cm., a left side margin of 2.5 cm., a right side margin of 1.5 cm., and a bottom margin of 1.0 cm. Margin border lines are not permitted. All work must be contained within a sight size not to exceed 17 by 26.2 cm.

(c) *Character of lines.* All drawings must be made with drafting instruments or by a process which will give them satisfactory reproduction characteristics. Every line and letter must be durable, black, sufficiently dense and dark, uniformly thick and well defined; the weight of all lines and letters must be heavy enough to permit adequate reproduction. This direction applies to all lines however fine, to shading, and to lines representing cut surfaces in sectional views. All lines must be clean, sharp, and solid. Fine or crowded lines should be avoided. Solid black should not be used for sectional or surface shading. Freehand work should be avoided wherever it is possible to do so.

(d) *Hatching and shading.* (1) Hatching should be made by oblique parallel lines spaced sufficiently apart to enable the lines to be distinguished without difficulty.

(2) Heavy lines on the shade side of objects should preferably be used except where they tend to thicken the work and obscure reference characters. The light should come from the upper left-hand corner at an angle of 45°. Surface delineations should preferably be shown by proper shading, which should be open.

(e) *Scale.* The scale to which a drawing is made ought to be large enough to show the mechanism without crowding when the drawing is reduced in size to two-thirds in reproduction, and views of portions of the mechanism on a larger scale should be used when necessary to show details clearly; two or more sheets should be used if one does not give sufficient room to accomplish this end, but the number of sheets should not be more than is necessary.

(f) *Reference characters.* The different views should be consecutively numbered figures. Reference numerals (and letters, but numerals are preferred) must be plain, legible and carefully formed, and not be encircled. They should, if possible, measure at least one-eighth of an inch (3.2 mm.) in height so that they may bear reduction to one twenty-fourth of an inch (1.1 mm.); and they may be slightly larger when there is sufficient room. They should not be so placed in the close and complex parts of the drawing as to interfere with a thorough comprehension of the same, and therefore should rarely cross or mingle with the lines. When necessarily grouped around a certain part, they should be placed at a little distance, at the closest point where there is available space, and connected by lines with the parts to which they refer. They should not be placed upon hatched or shaded surfaces but when necessary, a blank space may be left in the hatching or shading where the character occurs so that it shall appear perfectly distinct and separate from the work. The same part of an invention appearing in more than one view of the drawing must always be designated by the same character, and the

same character must never be used to designate different parts. Reference signs not mentioned in the description shall not appear in the drawing, and vice versa.

(g) *Symbols, legends.* Graphical drawing symbols and other labeled representations may be used for conventional elements when appropriate, subject to approval by the Office. The elements for which such symbols and labeled representations are used must be adequately identified in the specification. While descriptive matter on drawings is not permitted, suitable legends may be used, or may be required, in proper cases, as in diagrammatic views and flowsheets or to show materials or where labeled representations are employed to illustrate conventional elements. Arrows may be required, in proper cases, to show direction of movement. The lettering should be as large as, or larger than, the reference characters.

(h) [Reserved]

(i) *Views.* The drawing must contain as many figures as may be necessary to show the invention; the figures should be consecutively numbered if possible in the order in which they appear. The figures may be plain, elevation, section, or perspective views, and detail views of portions of elements, on a larger scale if necessary, may also be used. Exploded views, with the separated parts of the same figure embraced by a bracket, to show the relationship or order of assembly of various parts are permissible. When necessary, a view of a large machine or device in its entirety may be broken and extended over several sheets if there is no loss in facility of understanding the view. Where figures on two or more sheets form in effect a single complete figure, the figures on the several sheets should be so arranged that the complete figure can be understood by laying the drawing sheets adjacent to one another. The arrangement should be such that no part of any of the figures appearing on the various sheets are concealed and that the complete figure can be understood even though spaces will occur in the complete figure because of the margins on the drawing sheets. The plane upon which a sectional view is taken should be indicated on the general view by a broken line, the ends of which should be designated by numerals corresponding to the figure number of the sectional view and have arrows applied to indicate the direction in which the view is taken. A moved position may be shown by a broken line superimposed upon a suitable figure if this can be done without crowding, otherwise a separate figure must be used for this purpose. Modified forms of construction can only be shown in separate figures. Views should not be connected by projection lines nor should center lines be used.

(j) *Arrangement of views.* All views on the same sheet should stand in the same direction and, if possible, stand so that they can be read with the sheet held in an upright position. If views longer than the width of the sheet are necessary for the clearest illustration of the invention, the sheet may be turned on its side so that the top of the sheet with the appropriate top margin is on the right-hand side. One figure must not be placed upon another or within the outline of another.

(k) *Figure for Official Gazette.* The drawing should, as far as possible, be so planned that one of the views will be suitable for publication in the *Official Gazette* as the illustration of the invention.

(l) *Extraneous matter.* Identifying indicia (such as the attorney's docket number, inventor's name, number of sheets, etc.) not to exceed 2¼ inches (7.0 cm.) in width may be placed in a centered location between the side edges within three-fourths inch (19.1 mm.) of the top edge. Authorized security markings may be placed on the drawings provided they are outside the illustrations and are removed when the material is declassified. Other extraneous matter will not be permitted upon the face of a drawing.

(m) *Transmission of drawings.* Drawings transmitted to the Office should be sent flat, protected by a sheet of heavy binder's board, or may be rolled for transmission in a suitable mailing tube; but must never be folded. If received creased or mutilated, new drawings will be required.

(See § 1.152 for design drawing, § 1.165 for plant drawings, and § 1.174 for reissue drawings.)

(Pub. L. 94-131, 89 Stat. 685)

[24 FR 10332, Dec. 22, 1959; 31 FR 12923, Oct. 4, 1966; 36 FR 9775, May 28, 1971; 43 FR 20464, May 11, 1978; and 45 FR 73657, Nov. 6, 1980]

§ 1.85 Informal drawings.

The requirements of § 1.84 relating to drawings will be strictly enforced. A drawing not executed in conformity thereto, if suitable for reproduction, may be admitted but in such case the drawing must be corrected or a new one furnished, as required.

[36 FR 9775, May 28, 1971 and 47 FR 33086, July 30, 1982, effective Oct. 1, 1982]

§ 1.86 [Removed]

[47 FR 33086, July 30, 1982, effective Oct. 1, 1982]

§ 1.88 Use of old drawings.

If the drawings of a new application are to be identical with the drawings of a previous application of the applicant on file in the Office, or with part of such drawings, the old drawings or any sheets thereof may be used if the prior application is, or is about to be, abandoned, or if the sheets to be used are cancelled in the prior application. The new application must be accompanied by a letter requesting the transfer of the drawings, which should be completely identified.

MODELS, EXHIBITS, SPECIMENS

AUTHORITY: Secs. 1.91 to 1.95 also issued under 35 U.S.C. 114.

§ 1.91 Models not generally required as part of application or patent.

Models were once required in all cases admitting a model, as a part of the application, and these models became a part of the record of the patent. Such models are no longer generally required (the description of the invention in the specification, and the drawings, must be sufficiently full and complete, and capable of being understood, to disclose the invention without the aid of a model), and will not be admitted unless specifically called for.

§ 1.92 Model or exhibit may be required.

A model, working model, or other physical exhibit, may be required if deemed necessary for any purpose on examination of the application.

§ 1.93 Specimens.

When the invention relates to a composition of matter, the applicant may be required to furnish specimens of the composition, or of its ingredients or intermediates, for the purpose of inspection or experiment.

§ 1.94 Return of models, exhibits or specimens.

Models, exhibits, or specimens in applications which have become abandoned, and also in other applications on conclusion of the prosecution, may be returned to the applicant upon demand and at his expense, unless it be deemed necessary that they be preserved in the Office. Such physical exhibits in contested cases may be returned to the parties at their expense. If not claimed within a reasonable time, they may be disposed of at the discretion of the Commissioner.

§ 1.95 Copies of exhibits.

Copies of models or other physical exhibits will not ordinarily be furnished by the Office, and any model or exhibit in an application or patent shall not be taken from the Office except in the custody of an employee of the Office specially authorized by the Commissioner.

§ 1.96 Submission of computer program listings.

Descriptions of the operation and general content of computer program listings should appear in the description portion of the specification. A computer program listing for the purpose of these rules is defined as a print-out that lists in appropriate sequence the instructions, routines, and other contents of a program for a computer. The program listing may be either in machine or machine-independent (object or source) language which will cause a computer to perform a desired procedure or task such as solve a problem, regulate the flow of work in a computer, or control or monitor events. Computer program listings may be submitted in patent applications in the following forms:

(a) *Material which will be printed in the patent.* If the computer program listing is contained on 10 printout pages or less, it must be submitted either as drawings or as part of the specification.

(1) *Drawings.* The listing may be submitted in the manner and complying with the requirements for drawings as provided in § 1.84. At least one figure numeral is required on each sheet of drawing.

(2) *Specification.* (i) The listing may be submitted as part of the specification in accordance with the provisions of § 1.52, at the end of the description but before the claims.

(ii) The listing may be submitted as part of the specification in the form of computer printout sheets (commonly 14 by 11 inches in size) for use as "camera ready copy" when a patent is subsequently printed. Such computer printout sheets must be original copies from the computer with dark solid black letters not less than 0.21 cm high, on white, unshaded and unlined paper, the printing on each sheet must be limited to an area 9 inches high by 13 inches wide, and the sheets should be submitted in a protective cover. When printed in patents, such computer printout sheets will appear at the end of the description but before the claims and will usually be reduced about ½ in size with two printout sheets being printed as one patent specification page. Any amendments must be made by way of submission of a substitute sheet if the copy is to be used for camera ready copy.

(b) *As an appendix which will not be printed.* If a computer program listing printout is 11 or more pages long, applicants may submit such listing in the form of microfiche, referred to in the specification (see § 1.77 (c)(2)). Such microfiche filed with a patent application is to be referred to as a "microfiche appendix." The "microfiche appendix" will not be part of the printed patent. Reference in the application to the "microfiche appendix" should be made at the beginning of the specification at the location indicated in § 1.77(c)(2). Any amendments thereto must be made by way of revised microfiche. All computer program listings submitted on paper will be printed as part of the patent.

(1) *Availability of appendix.* Such computer program listings on microfiche will be available to the public for inspection, and paper or microfiche copies thereof will be separately available for purchase, after a patent based on such an application is granted or the application is otherwise made publicly available.

(2) *Submission requirements.* Computer-generated information submitted as an appendix to an application for patent shall be in the form of microfiche in accor-

dance with the standards set forth in the following American National (ANSI) or National Micrographics Association (NMA) Standards (Note: As new editions of these standards are published, the latest shall apply):

ANSI PH 1.28-1976—Specifications for Photographic Film for Archival Records, Silver-Gelatin Type, on Cellulose Ester Base.

ANSI PH 1.41—1976 Specifications for Photographic Film for Archival Records, Silver-Gelatin Type, on Polyester Base.

NMA-MS1 (1971) Quality Standards for Computer Output Microfilm.

ANS1/NMA MS2 (1978) Format and Coding Standards for Computer Output Microfilm.

NMA MS5 (ANSI PH 5.9-1975) Microfiche of Documents.

ANSI PH 2.19 (1959)—Diffuse Transmission Density.

except as modified or clarified below:

(i) Either Computer-Output Microfilm (COM) output or copies of photographed paper copy may be submitted. In the former case, NMA standards MS1 and MS2 apply; in the latter case, standard MS5 applies.

(ii) Film submitted shall be first generation (camera film) negative appearing microfiche (with emulsion on the back side of the film when viewed with the images right reading).

(iii) Reduction ratio of microfiche submitted should be 24:1 or a similar ratio where variation from said ratio is required in order to fit the documents into the image area of the microfiche format used.

(iv) Film submitted shall have a thickness of at least .005 inches (0.13 mm) and not more than .009 inches (0.23 mm) for either cellulose acetate base or polyester base type.

(v) Both microfiche formats A1 (98 frames, 14 columns × 7 rows) and A3 (63 frames, 9 columns × 7 rows) which are described in NMA standard MS2 (A1 is also described in MS5) are acceptable for use in preparation of microfiche submitted.

(vi) At least the left-most 1/3 (50 mm × 12 mm) of the header or title area of each microfiche submitted shall be clear or positive appearing so that the Patent and Trademark Office can apply serial number and filing date thereto in an eye-readable form. The middle portion of the header shall be used by applicant to apply an eye-readable application identification such as the title and/or the first inventor's name. The attorney's docket number may be included. The final right-hand portion of the microfiche shall contain sequence information for the microfiche, such as 1 of 4, 2 of 4, etc.

(vii) Additional requirements which apply specifically to microfiche of filmed paper copy:

(A) The first frame of each microfiche submitted shall contain a standard test target which contains five NBS Micro-copy Resolution Test Charts (No. 1010A), one in the center and one in each corner. See illustration on page 2 of NMA Recommended Practice MS104, Inspection and Quality Control of First Generation Silver Halide Microfilm. See also paragraph 7 of NMA-MS5.

(B) The second frame of each microfiche submitted must contain a fully descriptive title and the inventor's name as filed.

(C) The pages or lines appearing on the microfiche frames should be consecutively numbered.

(D) Pagination of the microfiche frames shall be from left to right and from top to bottom.

(E) At a reduction of 24:1 resolution of the original microfilm shall be at least 120 lines per mm (5.0 target) so that reproduction copies may be expected to comply with provisions of paragraph 7.1.4 of NMA Standard MS5.

(F) Background density of negative appearing camera master microfiche of filmed paper documents shall be within the range 0.9 to 1.2 and line density should be no greater than 0.08. The density shall be visual diffuse density as measured using the method described in ANSI Standard PH 2.19.

(G) An index, when included, should appear in the last frame (lower right hand corner when data is right-reading) of each microfiche. See NMA-MS5, paragraph 6.6.

(viii) Microfiche generated by Computer Output Microfilm (COM).

(A) Background density of negative-appearing COM-generated camera master microfiche shall be within the range of 1.5 to 2.0 and line density should be no greater than 0.2. The density shall be visual diffuse density as described in ANSI PH 2.19.

(B) The first frame of each microfiche submitted should contain a resolution test frame in conformance with NMA standard MS1.

(C) The second frame of each microfiche submitted must contain a fully descriptive title and the inventor's name as filed.

(D) The pages or lines appearing on the microfiche frames should be consecutively numbered.

(E) It is preferred that pagination of the microfiche frames be from left to right and top to bottom but the alternative, i.e., from top to bottom and from left to right, is also acceptable.

(F) An index, when included, should appear on the last frame (lower right hand corner when data is right reading) of each microfiche.

(G) Amendment of microfiche must be made by way of replacement microfiche.

(35 U.S.C. 6 and 41)

[46 FR 2612, Jan. 12, 1981]

INFORMATION DISCLOSURE STATEMENT

§ 1.97 Filing of information disclosure statement.

(a) As a means of complying with the duty of disclosure set forth in § 1.56, applicants are encouraged to file an information disclosure statement at the time of filing the application or within the later of three months after the filing date of the application or two months after applicant receives the filing receipt. If filed separately, the disclosure statement should, in addition to the identification of the application, include the Group Art Unit to which the application is assigned as indicated on the filing receipt. The disclosure statement may either be separate from the specification or may be incorporated therein.

(b) A disclosure statement filed in accordance with paragraph (a) of this section shall not be construed as a representation that a search has been made or that no other material information as defined in § 1.56(a) exists.

[42 FR 5594, Jan. 28, 1977 and 48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

§ 1.98 Content of information disclosure statement.

(a) Any disclosure statement filed under § 1.97 or § 1.99 shall include: (1) A listing of patents, publications or other information and (2) a concise explanation of the relevance of each listed item. The disclosure statement shall be accompanied by a copy of each listed patent or publication or other item of information in written form or of at least the portions thereof considered by the person filing the disclosure statement to be pertinent. All United States patents listed should be identified by their patent numbers, patent dates and names of the patentees. Each foreign published application or patent should be cited by identifying the country or office which issued it, the document number and publication date indicated on the document. Each printed publication should be identified by author (if any), title of the publication, pages, date and place of publication.

(b) When two or more patents or publications considered material are substantially identical, a copy of a representative one may be included in the statement and others merely listed. A translation of the pertinent portions of foreign language patents or publications considered material should be transmitted if an existing translation is readily available to the applicant.

[42 FR 5594, Jan. 28, 1977 and 48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

§ 1.99 Updating of information disclosure statement.

If prior to issuance of a patent an applicant, pursuant to his or her duty of disclosure under § 1.56, wishes to bring to the attention of the Office additional patents, publications or other information not previously submitted, the additional information should be submitted to the Office with reasonable promptness. It may be included in a supplemental information disclosure statement or may be incorporated into other communications to be considered by the examiner. Any transmittal of additional information shall be accompanied by explanations of relevance and by copies in accordance with the requirements of § 1.98.

[42 FR 5594, Jan. 28, 1977 and 48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

EXAMINATION OF APPLICATIONS

AUTHORITY: Secs. 1.101 to 1.108 also issued under 35 U.S.C. 131, 132.

§ 1.101 Order of examination.

(a) Applications filed in the Patent and Trademark Office and accepted as complete applications are assigned for examination to the respective examining groups having the classes of inventions to which the applications relate. Applications shall be taken up for examination by the examiner to whom they have been assigned in the order in which they have been filed except for those applications in which examination has been advanced pursuant to § 1.102 and those applications in which the Office has accepted a request for waiver of patent rights under § 1.139. International applications which have complied with the requirements of 35 U.S.C. 371(c) will be taken up for action based on the date on which such requirements were met. However, unless a request has been filed under 35 U.S.C. 371(f), no action may be taken prior to 21 months from the priority date.

(b) Applications which have been acted upon by the examiner, and which have been placed by the applicant in condition for further action by the examiner (amended applications) shall be taken up for action in such order as shall be determined by the Commissioner.

[24 FR 10332, Dec. 22, 1959; 29 FR 13470, Sept. 30, 1964; 33 FR 5624, Apr. 11, 1968; 34 FR 18857, Nov. 26, 1969 and 48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

§ 1.102 Advancement of examination.

(a) Applications will not be advanced out of turn for examination or for further action except as provided by this part, or upon order of the Commissioner to expedite the business of the Office, or upon filing of a request under paragraph (b) of this section or upon filing a petition under paragraphs (c) or (d) of this section with a verified showing which, in the opinion of the Commissioner, will justify so advancing it.

(b) Applications wherein the inventions are deemed of peculiar importance to

some branch of the public service and the head of some department of the Government requests immediate action for that reason, may be advanced for examination.

(c) A petition to make an application special may be filed without a fee if the basis for the petition is the applicant's age or health or that the invention will materially enhance the quality of the environment or materially contribute to the development or conservation of energy resources.

(d) A petition to make an application special on grounds other than those referred to in paragraph (c) of this section must be accompanied by the petition fee set forth in § 1.17(i).

[47 FR 33086, July 30, 1982, effective Oct. 1, 1982]

§ 1.103 Suspension of action.

(a) Suspension of action by the Office will be granted for good and sufficient cause and for a reasonable time specified upon petition by the applicant and, if such cause is not the fault of the Office, the payment of the fee set forth in § 1.17(i). Action will not be suspended when a response by the applicant to an Office action is required.

(b) If action by the Office on an application is suspended when not requested by the applicant, the applicant shall be notified of the reasons therefor.

(c) Action by the examiner may be suspended by order of the Commissioner in the case of applications owned by the United States whenever publication of the invention by the granting of a patent thereon might be detrimental to the public safety or defense, at the request of the appropriate department or agency.

(d) Action on applications in which the Office has accepted a request filed under § 1.139 will be suspended for the entire pendency of these applications except for purposes relating to proceedings under § 1.201(b).

[24 FR 10332, Dec. 22, 1959; 33 FR 5624, Apr. 11, 1968 and 47 FR 33086, July 30, 1982, effective Oct. 1, 1982]

§ 1.104 Nature of examination; examiner's action.

(a) On taking up an application for examination or a patent in a reexamination proceeding, the examiner shall make a thorough study thereof and shall make a thorough investigation of the available prior art relating to the subject matter of the claimed invention. The examination shall be complete with respect both to compliance of the application or patent under reexamination with the applicable statutes and rules and to the patentability of the invention as claimed, as well as with respect to matters of form, unless otherwise indicated.

(b) The applicant, or in the case of a reexamination proceeding, both the patent owner and the requester, will be notified of the examiner's action. The reasons for any adverse action or any objection or requirement will be stated and such information or references will be given as may be useful in aiding the applicant, or in the case of a reexamination proceeding the patent owner, to judge the propriety of continuing the prosecution.

(c) An international-type search will be made in all national applications filed on and after June 1, 1978.

(d) Any national application may also have an international-type search report prepared thereon at the time of the national examination on the merits, upon specific written request therefor and payment of the international-type search report fee. See § 1.21(e) for amount of fee for preparation of international-type search report.

NOTE: The Patent and Trademark Office does not require that a formal report of an international-type search be prepared in order to obtain a search fee refund in a later filed international application.

(Pub. L. 94-131, 89 Stat. 685; 35 U.S.C. 6)

[24 FR 10332, Dec. 22, 1959; 43 FR 20465, May 11, 1978; 46 FR 29182, May 29, 1981, 47 FR 33086, July 30, 1982, effective Oct. 1, 1982]

§ 1.105 Completeness of examiner's action.

The examiner's action will be complete as to all matters, except that in appropriate circumstances, such as misjoinder of invention, fundamental defects in the application, and the like, the action of the examiner may be limited to such matters before further action is made. However, matters of form need not be raised by the examiner until a claim is found allowable.

§ 1.106 Rejection of claims.

(a) If the invention is not considered patentable, or not considered patentable as claimed, the claims, or those considered unpatentable will be rejected.

(b) In rejecting claims for want of novelty or for obviousness, the examiner must cite the best references at his command. When a reference is complex or shows or describes inventions other than that claimed by the applicant, the particular part relied on must be designated as nearly as practicable. The pertinence of each reference, if not apparent, must be clearly explained and each rejected claim specified.

(c) In rejecting claims the examiner may rely upon admissions by the applicant, or the patent owner in a reexamination proceeding, as to any matter affecting patentability and, insofar as rejections in applications are concerned, may also rely upon facts within his or her knowledge pursuant to § 1.107.

[24 FR 10332, Dec. 22, 1959; 34 FR 18857, Nov. 26, 1969; 47 FR 21752, May 19, 1982]

§ 1.107 Citation of references.

(a) If domestic patents are cited by the examiner, their numbers and dates, and the names of the patentees, and the classes of inventions must be stated. If foreign published applications or patents are cited, their nationality or country, numbers and dates, and the names of the patentees must be stated, and such other data must be furnished as may be necessary to enable the applicant, or in the case of a reexamination proceeding, the patent owner, to identify the published applications or patents cited. In citing foreign published applications or patents, in case only a part of the document is involved, the particular pages and sheets containing the parts relied upon must be identified. If printed publications are cited, the author (if any), title, date, pages or plates, and place of publication, or place where copy can be found, shall be given.

(b) When a rejection in an application is based on facts within the personal knowledge of an employee of the Office, the data shall be as specific as possible, and the reference must be supported, when called for by the applicant, by the affidavit of such employee, and such affidavit shall be subject to contradiction or explanation by the affidavits of the applicant and other persons.

[46 FR 29182, May 29, 1981]

§ 1.108 Abandoned applications not cited.

Abandoned applications as such will not be cited as references except those which have become abandoned as a result of the filing and acceptance of a request under § 1.139.

[33 FR 5624, Apr. 11, 1968]

§ 1.109 Reasons for allowance.

If the examiner believes that the record of the prosecution as a whole does not make clear his or her reasons for allowing a claim or claims, the examiner may set forth such reasoning. The reasons shall be incorporated into an Office action rejecting other claims of the application or patent under reexamination or be the subject of a separate communication to the applicant or patent owner. The applicant or patent owner may file a statement commenting on the reasons for allowance within such time as may be specified by the examiner. Failure to file such a statement shall not give rise to any implication that the applicant or patent owner agrees with or acquiesces in the reasoning of the examiner.

[46 FR 29182, May 29, 1981]

ACTION BY APPLICANT AND FURTHER CONSIDERATION

AUTHORITY: Secs. 1.111 to 1.113 also issued under 35 U.S.C. 132.

§ 1.111 Reply by applicant or patent owner.

(a) After the Office action, if adverse in any respect, the applicant or patent owner, if he or she persists in his or her application for a patent or reexamination proceeding, must reply thereto and may request reconsideration or further examination, with or without amendment.

(b) In order to be entitled to reconsideration or further examination, the applicant or patent owner must make request therefor in writing. The reply by the applicant or patent owner must distinctly and specifically point out the supposed errors in the examiner's action and must respond to every ground of objection and rejection in the prior Office action. If the reply is with respect to an application, a request may be made that objections or requirements as to form not necessary to further consideration of the claims be held in abeyance until allowable subject matter is indicated. The applicant's or patent owner's reply must appear throughout to be a bona fide attempt to advance the case to final action. A general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references does not comply with the requirements of this section.

(c) In amending in response to a rejection of claims in an application or patent undergoing reexamination, the applicant or patent owner must clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. He or she must also show how the amendments avoid such references or objections. (See §§ 1.135 and 1.136 for time for reply.)

[46 FR 29182, May 29, 1981]

§ 1.112 Reconsideration.

After response by applicant or patent owner (§ 1.111), the application or patent under reexamination will be reconsidered and again examined. The applicant or patent owner will be notified if claims are rejected, or objections or requirements made, in the same manner as after the first examination. Applicant or patent owner may respond to such Office action in the same manner provided in § 1.111, with or without amendment. Any amendments after the second Office action must ordinarily be restricted to the rejection or to the objections or requirements made. The application or patent under reexamination will be again considered, and so on repeatedly, unless the examiner has indicated that the action is final.

[46 FR 29182, May 29, 1981]

§ 1.113 Final rejection or action.

(a) On the second or any subsequent examination or consideration the rejection

or other action may be made final, whereupon applicant's or patent owner's response is limited to appeal in the case of rejection of any claim (§ 1.191), or to amendment as specified in § 1.116. Petition may be taken to the Commissioner in the case of objections or requirements not involved in the rejection of any claim (§ 1.181). Response to a final rejection or action must include cancellation of, or appeal from the rejection of, each rejected claim. If any claim stands allowed, the response to a final rejection or action must comply with any requirements or objection as to form.

(b) In making such final rejection, the examiner shall repeat or state all grounds of rejection then considered applicable to the claims in the case, clearly stating the reasons therefor.

[24 FR 10332, Dec. 22, 1959 and 46 FR 29182, May 29, 1981]

AMENDMENTS

AUTHORITY: Secs. 1.115 to 1.127 also issued under 35 U.S.C. 132.

§ 1.115 Amendment.

The applicant may amend before or after the first examination and action and also after the second or subsequent examination or reconsideration as specified in § 1.112 or when and as specifically required by the examiner. The patent owner may amend in accordance with §§ 1.510(e) and 1.530(b) prior to reexamination, and during reexamination proceedings in accordance with §§ 1.112 and 1.116.

[46 FR 29183, May 29, 1981]

§ 1.116 Amendments after final action.

(a) After final rejection or action (§ 1.113) amendments may be made cancelling claims or complying with any requirement of form which has been made. Amendments presenting rejected claims in better form for consideration on appeal may be admitted. The admission of, or refusal to admit, any amendment after final rejection, and any proceedings relative thereto, shall not operate to relieve the application or patent under reexamination from its condition as subject to appeal or to save the application from abandonment under § 1.135.

(b) If amendments touching the merits of the application or patent under reexamination are presented after final rejection, or after appeal has been taken, or when such amendment might not otherwise be proper, they may be admitted upon a showing of good and sufficient reasons why they are necessary and were not earlier presented.

(c) No amendment can be made as a matter of right in appealed cases. After decision on appeal, amendments can only be made as provided in § 1.198, or to carry into effect a recommendation under § 1.196.

[24 FR 10332, Dec. 22, 1959 and 46 FR 29183, May 29, 1981]

§ 1.117 Amendment and revision required.

The specification, claims and drawing must be amended and revised when required, to correct inaccuracies of description and definition or unnecessary prolixity, and to secure correspondence between the claims, the specification and the drawing.

§ 1.118 Amendment of disclosure.

(a) No amendment shall introduce new matter into the disclosure of an application after the filing date of the application (§ 1.53(b)). All amendments to the specification, including the claims, and the drawings filed after the filing date of the application must conform to at least one of them as it was at the time of the filing of the application. Matter not found in either, involving a departure from or an addition to the original disclosure, cannot be added to the application after its filing date even though supported by an oath or declaration in accordance with § 1.63 or § 1.67 filed after the filing date of the application.

(b) If it is determined that an amendment filed after the filing date of the application introduces new matter, claims containing new matter will be rejected and deletion of the new matter in the specification and drawings will be required even if the amendment is accompanied by an oath or declaration in accordance with § 1.63 or § 1.67.

[48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

§ 1.119 Amendment of claims.

The claims may be amended by canceling particular claims, by presenting new claims, or by rewriting particular claims as indicated in § 1.121. The requirements of § 1.111 must be complied with by pointing out the specific distinctions believed to render the claims patentable over the references in presenting arguments in support of new claims and amendments.

[32 FR 13583, Sept. 28, 1967]

§ 1.121 Manner of making amendments.

(a) Erasures, additions, insertions, or alterations of the Office file of papers and records must not be physically entered by the applicant. Amendments to the application (excluding the claims) are made by filing a paper (which should conform to § 1.52), directing or requesting that specified amendments be made. The exact word or words to be stricken out or inserted by said amendment must be specified and the precise point indicated where the deletion or insertion is to be made.

(b) Except as otherwise provided herein, a particular claim may be amended only by directions to cancel or by rewriting such claim with underlining below the word or words added and brackets around the word or words deleted. The rewriting of a claim in this form will be construed as directing the cancellation of the original claim; however, the original claim number followed by the parenthetical word "amended" must be used for the rewritten claim. If a previously rewritten claim is rewritten, underlining and bracketing will be applied in reference to the previously rewritten claim with the parenthetical expression "twice amended," "three times amended," etc., following the original claim number.

(c) A particular claim may be amended in the manner indicated for the application in paragraph (a) of this section to the extent of corrections in spelling, punctuation, and typographical errors. Additional amendments in this manner will be admitted provided the changes are limited to: (1) Deletions and/or (2) the addition of no more than five words in any one claim. Any amendment submitted with instructions to amend particular claims but failing to conform to the provisions of paragraphs (b) and (c) of this section may be considered nonresponsive and treated accordingly.

(d) Where underlining or brackets are intended to appear in the printed patent or are properly part of the claimed material and not intended as symbolic of changes in the particular claim, amendment by rewriting in accordance with paragraph (b) of this section shall be prohibited.

(e) In reissue applications, both the descriptive portion and the claims are to be amended as specified in paragraph (a) of this section.

(f) Proposed amendments presented in patents involved in reexamination proceedings must be presented in the form of a full copy of the text of: (1) Each claim which is amended and (2) each paragraph of the description which is amended. Matter deleted from the patent shall be placed between brackets and matter added shall be underlined. Copies of the printed claims from the patent may be used with any additions being indicated by carets and deleted material being placed between brackets. Claims must not be renumbered and the numbering of the claims added for reexamination must follow the number of the highest numbered patent claim. No amendment may enlarge the scope of the claims of the patent. No new matter may be introduced into the patent.

[32 FR 13583, Sept. 28, 1967 and 46 FR 29183, May 29, 1981]

§ 1.122 Entry and consideration of amendments.

(a) Amendments are "entered" by the Office by making the proposed deletions by drawing a line in red ink through the word or words cancelled, and by making the proposed substitutions or insertions in red ink, small insertions being written in at the designated place and larger insertions being indicated by reference.

(b) Ordinarily all amendments presented in a paper filed while the application is open to amendment are entered and considered, subsequent cancellation or correction being required of improper amendments. Untimely amendatory papers may be refused entry and consideration in whole or in part.

§ 1.123 Amendments to the drawing.

No change in the drawing may be made except by permission of the Office. Permissible changes in the construction shown in any drawing may be made only by bonded draftsmen, at applicant's expense, or by the submission of substitute drawings by applicant. A sketch in permanent ink showing proposed changes, to become part of the record, must be filed for approval by the examiner. The paper requesting amendments to the drawing should be separate from other papers.

[24 FR 10332, Dec. 22, 1959, 36 FR 9775, May 28, 1971 and 48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

§ 1.124 Amendment of amendments.

When an amendatory clause is to be amended, it should be wholly rewritten and the original insertion canceled, so that no interlineations or deletions shall appear in the clause as finally presented. Matter canceled by amendment can be reinstated only by a subsequent amendment presenting the canceled matter as a new insertion.

§ 1.125 Substitute specification.

If the number or nature of the amendments shall render it difficult to consider the case, or to arrange the papers for printing or copying, the examiner may require the entire specification, including the claims, or any part thereof, to be rewritten. A substitute specification may not be accepted unless it has been required by the examiner or unless it is clear to the examiner that acceptance of a substitute specification would facilitate processing of the application. Any substitute specification filed must be accompanied by a statement that the substitute specification includes no new matter. Such statement must be a verified statement if made by a person not registered to practice before the Office.

[48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

§ 1.126 Numbering of claims.

The original numbering of the claims must be preserved throughout the prosecution. When claims are canceled, the re-

maining claims must not be renumbered. When claims are added, except when presented in accordance with § 1.121(b), they must be numbered by the applicant consecutively beginning with the number next following the highest numbered claim previously presented (whether entered or not). When the application is ready for allowance, the examiner, if necessary, will renumber the claims consecutively in the order in which they appear or in such order as may have been requested by applicant.

[32 FR 13583, Sept. 28, 1967]

§ 1.127 Petition from refusal to admit amendment.

From the refusal of the primary examiner to admit an amendment, in whole or in part, a petition will lie to the Commissioner under § 1.181.

AFFIDAVITS OVERCOMING REJECTIONS

§ 1.131 Affidavit or declaration of prior invention to overcome cited patent or publication.

(a) When any claim of an application or a patent under reexamination is rejected on reference to a domestic patent which substantially shows or describes but does not claim the rejected invention, or on reference to a foreign patent or to a printed publication, and the applicant or the owner of the patent under reexamination shall make oath or declaration as to facts showing a completion of the invention in this country before the filing date of the application on which the domestic patent issued, or before the date of the foreign patent, or before the date of the printed publication, then the patent or publication cited shall not bar the grant of a patent to the applicant or the confirmation of the patentability of the claims of the patent, unless the date of such patent or printed publication is more than one year prior to the date on which the applicant's or patent owner's application was filed in this country.

(b) The showing of facts shall be such, in character and weight, as to establish reduction to practice prior to the effective date of the reference, or conception of the invention prior to the effective date of the reference coupled with due diligence from said date to a subsequent reduction to practice or to the filing of the application. Original exhibits of drawings or records, or photocopies thereof, must accompany and form part of the affidavit or declaration or their absence satisfactorily explained.

(35 U.S.C. 132)

[24 FR 10332, Dec. 22, 1959; 34 FR 18857, Nov. 26, 1969 and 48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

§ 1.132 Affidavits or declarations traversing grounds of rejection.

When any claim of an application or a patent under reexamination is rejected on reference to a domestic patent which substantially shows or describes but does not claim the invention, or on reference to a foreign patent, or to a printed publication, or to facts within the personal knowledge of an employee of the Office, or when rejected upon a mode or capability of operation attributed to a reference, or because the alleged invention is held to be inoperative or lacking in utility, or frivolous or injurious to public health or morals, affidavits or declarations traversing these references or objections may be received.

(35 U.S.C. 132)

[24 FR 10332, Dec. 22, 1959, 34 FR 18857, Nov. 26, 1969 and 48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

INTERVIEWS

§ 1.133 Interviews.

(a) Interviews with examiners concerning applications and other matters pending before the Office must be had in the examiners' rooms at such times, within office hours, as the respective examiners may designate. Interviews will not be permitted at any other time or place without the authority of the Commissioner. Interviews for the discussion of the patentability of pending applications will not be had before the first official action thereon. Interviews should be arranged for in advance.

(b) In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for response to Office actions as specified in §§ 1.111, 1.135.

TIME FOR RESPONSE BY APPLICANT; ABANDONMENT OF APPLICATION

AUTHORITY: Secs. 1.135 to 1.138 also issued under 35 U.S.C. 133.

§ 1.134 Time period for response to an Office action.

An Office action will notify the applicant of any non-statutory or shortened statutory time period set for response to an Office action. Unless the applicant is notified in writing that response is required in less than six months, a maximum period of six months is allowed.

[47 FR 33086, July 30, 1982, effective Oct. 1, 1982]

§ 1.135 Abandonment for failure to respond within time period.

(a) If an applicant of a patent applica-

tion fails to respond within the time period provided under §§ 1.134 and 1.136, the application will become abandoned unless an Office action indicates otherwise.

(b) Prosecution of an application to save it from abandonment pursuant to paragraph (a) of this section must include such complete and proper action as the condition of the case may require. The admission of an amendment not responsive to the last Office action, or refusal to admit the same, and any proceedings relative thereto, shall not operate to save the application from abandonment.

(c) When action by the applicant is a bona fide attempt to respond and to advance the case to final action, and is substantially a complete response to the Office action, but consideration of some matter or compliance with some requirement has been inadvertently omitted, opportunity to explain and supply the omission may be given before the question of abandonment is considered.

(d) Prompt ratification or filing of a correctly signed copy may be accepted in case of an unsigned or improperly signed paper. (See § 1.7.)

[47 FR 33086, July 30, 1982, effective Oct. 1, 1982]

§ 1.136 Filing of timely responses with petition and fee for extension of time and extensions of time for cause.

(a) If an applicant is required to respond within a non-statutory or shortened statutory time period, applicant may respond up to four months after the time period set if a petition for an extension of time and the fee set in § 1.17 are filed prior to or with the response, unless (1) applicant is notified otherwise in an Office action or (2) the application is involved in an interference declared pursuant to § 1.207. The date on which the response, the petition, and the fee have been filed is the date of the response and also the date for purposes of determining the period of extension and the corresponding amount of the fee. The expiration of the time period is determined by the amount of the fee paid. In no case may an applicant respond later than the maximum time period set by statute, or be granted an extension of time under paragraph (b) of this section when the provisions of this paragraph are available.

(b) When a response with petition and fee for extension of time cannot be filed pursuant to paragraph (a) of this section, the time for response will be extended only for sufficient cause, and for a reasonable time specified. Any request for such extension must be filed on or before the day on which action by the applicant is due, but in no case will the mere filing of the request effect any extension. In no case can any extension carry the date on which response to an Office action is due beyond the maximum time period set by statute or be granted when the provisions of paragraph (a) of this section are available. See § 1.245 for extension of time in interference proceedings.

[24 FR 10332, Dec. 22, 1959, 41 FR 757, Jan. 5, 1976 and 47 FR 33086, July 30, 1982, effective Oct. 1, 1982]

§ 1.137 Revival of abandoned application.

(a) An application abandoned for failure to prosecute may be revived as a pending application if it is shown to the satisfaction of the Commissioner that the delay was unavoidable. A petition to revive an abandoned application must be promptly filed after the applicant is notified of, or otherwise becomes aware of, the abandonment, and must be accompanied by a showing of the causes of the delay, by the proposed response unless it has been previously filed, and by the petition fee set forth in § 1.17(l). Such showing must be a verified showing if made by a person not registered to practice before the Patent and Trademark Office.

(b) An application unintentionally abandoned for failure to prosecute, except pursuant to § 1.53(d), may be revived as a pending application if the delay was unintentional. A petition to revive an unintentionally abandoned application must be filed within one year of the date on which the application became abandoned or be filed within three months of the date of the first decision on a petition to revive under paragraph (a) of this section which was filed within one year of the date of abandonment of the application. A petition to revive an unintentionally abandoned application must be accompanied by (1) a statement that the abandonment was unintentional, (2) a proposed response unless it has been previously filed, and (3) a petition fee as set forth in § 1.17(m). Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. The Commissioner may require additional information where there is a question whether the abandonment was unintentional. The three month period set forth in this paragraph may be extended under the provisions of § 1.136(a), but no further extensions under § 1.136(b) will be granted. Petitions to the Commissioner under § 1.183 to waive any time periods for requesting revival of an unintentionally abandoned application will not be considered, but will be returned to the applicant.

(c) Any petition pursuant to paragraph (a) of this section not filed within six months of the date of abandonment must be accompanied by a terminal disclaimer with fee under § 1.321 dedicating to the public a terminal part of the term of any patent granted thereon equivalent to the period of abandonment of the application.

[47 FR 33086, July 30, 1982 and 48 FR 2696, Jan. 20, 1983 revised paragraph (b) effective Feb. 27, 1983]

§ 1.138 Express abandonment.

An application may be expressly abandoned by filing in the Patent and Trademark Office a written declaration of abandonment signed by the applicant himself or herself, and the assignee of record, if any, identifying the application. Except as provided in § 1.62 an application may also be expressly abandoned by filing a written declaration of abandonment signed by the attorney or agent of record. A registered attorney or agent acting under the provision of § 1.34(a), or of record, may also expressly abandon a prior application as of the filing date granted to a continuing application when filing such a continuing application. Express abandonment of the application may not be recognized by the Office unless it is actually received by appropriate officials in time to act thereon before the date of issue.

[34 FR 18857, Nov. 26, 1969 and 47 FR 47243, Oct. 25, 1982, effective Feb. 27, 1983]

§ 1.139 Waiver of patent rights.

An applicant may waive his rights to an enforceable patent based on a pending patent application by filing in the Patent and Trademark Office a written waiver of patent rights, a consent to the publication of an abstract, and authorization to open the complete application to inspection by the general public, and a declaration of abandonment signed by the applicant and the assignee of record or by the attorney or agent of record.

[33 FR 5624, Apr. 11, 1968]

JOINDER OF INVENTIONS IN ONE APPLICATION; RESTRICTION

AUTHORITY: Secs. 1.141 to 1.147 also issued under 35 U.S.C. 121.

§ 1.141 Different inventions in one application.

(a) Two or more independent and distinct inventions, that is, inventions which do not form a single general inventive concept, may not be claimed in one application, except that more than one species of an invention, not to exceed a reasonable number, may be specifically claimed in different claims in one application, provided the application also includes an allowable claim generic to all the claimed species and all the claims to species in excess of one are written in dependent form (§ 1.75) or otherwise include all the limitations of the generic claim.

(b) A group of claims of different categories in an application so linked as to form a single inventive concept are considered to be one invention. In particular any of the following groupings of claims of different categories may be included in the same application:

(1) In addition to a claim for a given product,

(i) A claim for one process specially adapted for the manufacture of the said product, as where the process of making as claimed cannot be used to make other and materially different products;

(ii) A claim for one use of the said product, as where said use as claimed cannot be practiced with another materially different product; or

(iii) Both (b)(1)(i) and (ii);

(2) In addition to a claim for a given process, a claim for one apparatus or means specifically designed for carrying out of the said process, that is, it cannot be used to practice another materially different process.

(c) If the situation of paragraph (b)(1) of this section exists where claims to all three categories, product, process and use, are included, and the product claims are not allowable, the use and process claims are not so linked as to form a single general inventive concept. Where the process and use claims are not so joined by an allowable linking product claim, the applicant will be required to elect either the use or the process for prosecution with the product claim.

(Pub. L. 94-131, 89 Stat. 685)

[43 FR 20465, May 11, 1978]

§ 1.142 Requirement for restriction.

(a) If two or more independent and distinct inventions are claimed in a single application, the examiner in his action shall require the applicant in his response to that action to elect that invention to which his claim shall be restricted, this official action being called a requirement for restriction (also known as a requirement for division). If the distinctness and independence of the inventions be clear, such requirement will be made before any action on the merits; however, it may be made at any time before final action in the case at the discretion of the examiner.

(b) Claims to the invention or inventions not elected, if not canceled, are nevertheless withdrawn from further consideration by the examiner by the election, subject however to reinstatement in the event the requirement for restriction is withdrawn or overruled.

§ 1.143 Reconsideration of requirement.

If the applicant disagrees with the requirement for restriction, he may request reconsideration and withdrawal or modification of the requirement, giving the reasons therefor. (See § 1.111.) In requesting reconsideration the applicant must indicate a provisional election of one invention for prosecution, which invention shall be the one elected in the event the requirement becomes final. The requirement for restriction will be reconsidered on such a request. If the requirement is repeated and made final the examiner will at the same time act on the claims to the invention elected.

§ 1.144 Petition from requirement for restriction.

After a final requirement for restriction, the applicant, in addition to making any response due on the remainder of the action, may petition the Commissioner to review the requirement. Petition may be deferred until after final action on or allowance of claims to the invention elected, but must be filed not later than appeal. A petition will not be considered if reconsideration of the requirement was not requested. (See § 1.181.)

§ 1.145 Subsequent presentation of claims for different invention.

If, after an office action on an application, the applicant presents claims directed to an invention distinct from and independent of the invention previously claimed, the applicant will be required to restrict the claims to the invention previously claimed if the amendment is entered, subject to reconsideration and review as provided in §§ 1.143 and 1.144.

§ 1.146 Election of species.

In the first action on an application containing a generic claim and claims restricted separately to each of more than one species embraced thereby, the examiner may require the applicant in his response to that action to elect that species of his or her invention to which his or her claim shall be restricted if no generic claim is held allowable. However, if such application contains claims directed to more than a reasonable number of species, the examiner may require restriction of the claims to not more than a reasonable number of species before taking further action in the case.

(Pub. L. 94-131, 89 Stat. 685)

[43 FR 20465, May 11, 1978]

DESIGN PATENTS

§ 1.151 Rules applicable.

The rules relating to applications for patents for other inventions or discoveries are also applicable to applications for patents for designs except as otherwise provided. (35 U.S.C. 171)

§ 1.152 Drawing.

The design must be represented by a drawing made in conformity with the rules laid down for drawings of mechanical inventions and must contain a sufficient number of views to constitute a complete disclosure of the appearance of the article. Appropriate surface shading must be used to show the character or contour of the surfaces represented.

(35 U.S.C. 113, 171)

§ 1.153 Title, description and claim, oath or declaration.

(a) The title of the design must designate the particular article. No description, other than a reference to the drawing, is ordinarily required. The claim shall be in formal terms to the ornamental design for the article (specifying name) as shown, or as shown and described. More than one claim is neither required nor permitted.

(b) The oath or declaration required of the applicant must comply with § 1.63.

[24 FR 10332, Dec. 22, 1959, 29 FR 18503, Dec. 29, 1964 and 48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

§ 1.154 Arrangement of specification.

The following order of arrangement should be observed in framing design specifications:

(a) Preamble, stating name of the applicant and title of the design.

(b) Description of the figure or figures of the drawing.

(c) Description, if any.

(d) Claim.

(e) Signed oath or declaration (See § 1.153(b)).

(35 U.S.C. 171)

[48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

§ 1.155 Issue and term of design patents.

(a) If, on examination, it shall appear that the applicant is entitled to a design patent under the law, a notice of allowance will be sent to the applicant, or applicant's attorney or agent, calling for the payment of the issue fee (§ 1.18(b)). If this issue fee is not paid within 3 months of the date of the notice of allowance, the application shall be regarded as abandoned.

(b) The Commissioner may accept the payment of the issue fee later than three months after the mailing of the notice of allowance as though no abandonment had ever occurred if upon petition the delay in payment is shown to have been unavoidable. The petition to accept the delayed payment must be promptly filed after the applicant is notified of, or otherwise becomes aware of, the abandonment, and must be accompanied by (1) the issue fee, unless it has been previously submitted, (2) the fee for delayed payment (§ 1.17(l)), and (3) a showing that the delay was unavoidable. Such showing must be a verified showing if made by a person not registered to practice before the Patent and Trademark Office.

(c) The Commissioner may, upon petition, accept the payment of the issue fee later than three months after the mailing of the notice of allowance as though no abandonment had ever occurred if the delay in payment was unintentional. The petition to accept the delayed payment must be filed within one year of the date on

which the application became abandoned or be filed within three months of the date of the first decision on a petition under paragraph (b) of this section which was filed within one year of the date of abandonment of the application. The petition to accept the delayed payment must be accompanied by (1) the issue fee, unless it has been previously submitted, (2) the fee for unintentionally delayed payment (§ 1.17(m)), and (3) a statement that the delay was unintentional. Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. The Commissioner may require additional information where there is a question whether the abandonment was unintentional. The three-month period from the date of the first decision referred to in this paragraph may be extended under the provisions of § 1.136(a), but no further extensions under § 1.136(b) will be granted. Petitions to the Commissioner under § 1.183 to waive any time periods for requesting revival of an unintentionally abandoned application will not be considered, but will be returned to the applicant.

(d) Any petition pursuant to paragraph (b) of this section not filed within six months of the date of abandonment must be accompanied by a terminal disclaimer with fee under § 1.321 dedicating to the public a terminal part of the term of any patent granted thereon equivalent to the period of abandonment of the application.

[40 FR 44813, Sept. 30, 1975 and 47 FR 33086, July 30, 1982, effective Oct. 1, 1982]

PLANT PATENTS

§ 1.161 Rules applicable.

The rules relating to applications for patent for other inventions or discoveries are also applicable to applications for patents for plants except as otherwise provided.

§ 1.162 Applicant, oath or declaration.

The applicant for a plant patent must be the person who has invented or discovered and asexually reproduced the new and distinct variety of plant for which a patent is sought (or as provided in §§ 1.42, 1.43, and 1.47). The oath or declaration required of the applicant, in addition to the averments required by § 1.63, must state that he or she has asexually reproduced the plant. Where the plant is a newly found plant the oath or declaration must also state that it was found in a cultivated area.

(35 U.S.C. 161)

[24 FR 10332, Dec. 22, 1959, 29 FR 18503, Dec. 29, 1964 and 48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

§ 1.163 Specification.

(a) The specification must contain as full and complete a disclosure as possible of the plant and the characteristics thereof that distinguish the same over related known varieties, and its antecedents, and must particularly point out where and in what manner the variety of plant has been asexually reproduced. In the case of a newly found plant, the specification must particularly point out the location and character of the area where the plant was discovered.

(b) Two copies of the specification (including the claim) must be submitted, but only one signed oath or declaration is required. The second copy of the specification may be a legible carbon copy of the original.

[48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

§ 1.164 Claim.

The claim shall be in formal terms to the new and distinct variety of the specified plant as described and illustrated, and may also recite the principal distinguishing characteristics. More than one claim is not permitted.

(35 U.S.C. 162)

§ 1.165 Drawings.

(a) Plant patent drawings are not mechanical drawings and should be artistically and competently executed. Figure numbers and reference characters need not be employed unless required by the examiner. The drawing must disclose all the distinctive characteristics of the plant capable of visual representation.

(b) The drawing may be in color and when color is a distinguishing characteristic of the new variety, the drawing must be in color. Two copies of color drawings must be submitted. Color drawings may be made either in permanent water color or oil, or in lieu thereof may be photographs made by color photography or properly colored on sensitized paper. Permanently mounted color photographs are acceptable. The paper in any case must correspond in size, weight and quality to the paper required for other drawings. See § 1.84.

(35 U.S.C. 113, 161)

[24 FR 10332, Dec. 22, 1959, 40 FR 57359, Dec. 9, 1975 and 47 FR 33086, July 30, 1982, effective Oct 1, 1982]

§ 1.166 Specimens.

The applicant may be required to furnish specimens of the plant, or its flower or fruit, in a quantity and at a time in its stage of growth as may be designated, for study and inspection. Such specimens, properly packed, must be forwarded in conformity with instructions furnished to the applicant. When it is not possible to

forward such specimens, plants must be made available for official inspection where grown.

(35 U.S.C. 114, 161)

§ 1.167 Examination.

(a) Applications may be submitted by the Patent and Trademark Office to the Department of Agriculture for study and report.

(b) Affidavits or declarations from qualified agricultural or horticultural experts regarding the novelty and distinctiveness of the variety of plant may be received when the need of such affidavits or declarations is indicated.

(35 U.S.C. 161, 164; E.O. 5464, Oct. 17, 1930)

[24 FR 10332, Dec. 22, 1959 and 34 FR 18857, Nov. 26, 1969]

REISSUES

AUTHORITY: Secs. 1.171 to 1.179 also issued under 35 U.S.C. 251.

§ 1.171 Application for reissue.

An application for reissue must contain the same parts required for an application for an original patent, complying with all the rules relating thereto except as otherwise provided, and in addition, must comply with the requirements of the rules relating to reissue applications. The application must be accompanied by a certified copy of an abstract of title or an order for a title report accompanied by the fee set forth in § 1.19(b) (2), to be placed in the file, and by an offer to surrender the original patent (§ 1.178).

[47 FR 33086, July 30, 1982, effective Oct. 1, 1982]

§ 1.172 Applicants, assignees.

(a) A reissue oath must be signed and sworn to or declaration made by the inventor or inventors except as otherwise provided (see §§ 1.42, 1.43, 1.47), and must be accompanied by the written assent of all assignees, if any, owning an undivided interest in the patent, but a reissue oath may be made and sworn to or declaration made by the assignee of the entire interest if the application does not seek to enlarge the scope of the claims of the original patent.

(b) A reissue will be granted to the original patentee, his legal representatives or assigns as the interest may appear.

[24 FR 10332, Dec. 22, 1959, 29 FR 10853, Dec. 29, 1964 and 48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

§ 1.173 Specification.

The specification of the reissue application must include the entire specification and claims of the patent, with the matter to be omitted by reissue enclosed in square brackets; and any additions made by the reissue must be underlined, so that the old and the new specifications and claims may be readily compared. Claims should not be renumbered and the numbering of claims added by reissue should follow the number of the highest numbered patent claim. No new matter shall be introduced into the specification.

§ 1.174 Drawings.

(a) The drawings upon which the original patent was issued may be used in reissue applications if no changes whatsoever are to be made in the drawings. In such cases, when the reissue application is filed, the applicant must submit a temporary drawing which may consist of a copy of the printed drawings of the patent or a photoprint of the original drawings of the size required for original drawing.

(b) Amendments which can be made in a reissue drawing, that is, changes from the drawing of the patent, are restricted.

[48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

§ 1.175 Reissue oath or declaration.

(a) Applicants for reissue, in addition to complying with the requirements of § 1.63, must also file with their applications a statement under oath or declaration as follows:

(1) When the applicant verily believes the original patent to be wholly or partly inoperative or invalid, stating such belief and the reasons why.

(2) When it is claimed that such patent is so inoperative or invalid "by reason of a defective specification or drawing," particularly specifying such defects.

(3) When it is claimed that such patent is inoperative or invalid "by reason of the patentee claiming more or less than he had the right to claim in the patent," distinctly specifying the excess or insufficiency in the claims.

(4) [Reserved]

(5) Particularly specifying the errors relied upon, and how they arose or occurred.

(6) Stating that said errors arose "without any deceptive intention" on the part of the applicant.

(7) Acknowledging a duty to disclose information applicant is aware of which is material to the examination of the application.

(b) Corroborating affidavits or declarations of others may be filed and the examiner may, in any case, require additional information or affidavits or declarations concerning the application for reissue and its object.

[24 FR 10332, Dec. 22, 1959, 29 FR 18503, Dec. 29, 1964; 34 FR 18857, Nov. 26, 1969; 47 FR 21752, May 19, 1982 and 48 FR 2696, Jan. 20, 1983, effective Feb. 27, 1983]

§ 1.176 Examination of reissue.

An original claim, if re-presented in the

reissue application, is subject to reexamination, and the entire application will be examined in the same manner as original applications, subject to the rules relating thereto, excepting that division will not be required. Applications for reissue will be acted on by the examiner in advance of other applications, but not sooner than two months after announcement of the filing of the reissue application has appeared in the *Official Gazette*.

[42 FR 5595, Jan. 28, 1977]

§ 1.177 Reissue in divisions.

The Commissioner may, in his or her discretion, cause several patents to be issued for distinct and separate parts of the thing patented, upon demand of the applicant, and upon payment of the required fee for each division. Each division of a reissue constitutes the subject of a separate specification descriptive of the part or parts of the invention claimed in such division; and the drawing may represent only such part or parts, subject to the provisions of §§ 1.83 and 1.84. On filing divisional reissue applications, they shall be referred to the Commissioner. Unless otherwise ordered by the Commissioner upon petition and payment of the fee set forth in § 1.17(i), all the divisions of a reissue will issue simultaneously; if there be any controversy as to one division, the others will be withheld from issue until the controversy is ended, unless the Commissioner shall otherwise order.

[47 FR 33086, July 30, 1982, effective Oct. 1, 1982]

§ 1.178 Original patent.

The application for a reissue must be accompanied by an offer to surrender the original patent. The application should also be accompanied by the original patent, or if the original is lost or inaccessible, by an affidavit or declaration to that effect. The application may be accepted for examination in the absence of the original patent or the affidavit or declaration, but one or the other must be supplied before the case is allowed. If a reissue be refused, the original patent will be returned to applicant upon his request.

[24 FR 10332, Dec. 22, 1959, 34 FR 18857, Nov. 26, 1969]

§ 1.179 Notice of reissue application.

When an application for a reissue is filed, there will be placed in the file of the original patent a notice stating that an application for reissue has been filed. When the reissue is granted or the reissue application is otherwise terminated, the fact will be added to the notice in the file of the original patent.

PETITIONS AND ACTION BY THE COMMISSIONER

§ 1.181 Petition to the Commissioner.

(a) Petition may be taken to the Commissioner: (1) From any action or requirement of any examiner in the ex parte prosecution of an application which is not subject to appeal to the Board of Appeals or to the court; (2) in cases in which a statute or the rules specify that the matter is to be determined directly by or reviewed by the Commissioner; and (3) to invoke the supervisory authority of the Commissioner in appropriate circumstances.

(b) Any such petition must contain a statement of the facts involved and the point or points to be reviewed and the action requested. Briefs or memoranda, if any, in support thereof should accompany or be embodied in the petition; and where facts are to be proven, the proof in the form of affidavits or declarations (and exhibits, if any) must accompany the petition.

(c) When a petition is taken from an action or requirement of an examiner in the ex parte prosecution of an application, it may be required that there have been a proper request for reconsideration (§ 1.111) and a repeated action by the examiner. The examiner may be directed by the Commissioner to furnish a written statement, within a specified time, setting forth the reasons for his decision upon the matters averred in the petition, supplying a copy thereof to the petitioner.

(d) Where a fee is required for a petition to the Commissioner the appropriate section of this part will so indicate. If any required fee does not accompany the petition, the petition will be dismissed.

(e) Oral hearing will not be granted except when considered necessary by the Commissioner.

(f) Except as otherwise provided in these rules, any such petition not filed within 2 months from the action complained of, may be dismissed as untimely. The mere filing of a petition will not stay the period for reply to an Examiner's action which may be running against an application, nor act as a stay of other proceedings.

(g) The Commissioner may delegate to appropriate Patent and Trademark Office officials the determination of petitions.

[24 FR 10332, Dec. 22, 1959, 34 FR 18857, Nov. 26, 1969; 35 FR 4260, Mar. 7, 1970 and 47 FR 33086, July 30, 1982, effective Oct. 1, 1982]

§ 1.182 Questions not specifically provided for.

All cases not specifically provided for in the regulations of this part will be decided in accordance with the merits of each case by or under the authority of the Commissioner, and such decision will be communicated to the interested parties in writing. Any petition seeking a decision under this section must be accompanied by the petition fee set forth in § 1.17(h).

[47 FR 33086, July 30, 1982, effective Oct. 1, 1982]

§ 1.183 Suspension of rules.

In an extraordinary situation, when justice requires, any requirement of the regulations in this part which is not a requirement of the statutes may be suspended or waived by the Commissioner or the Commissioner's designee, sua sponte, or on petition of the interested party, subject to such other requirements as may be imposed. Any petition under this section must be accompanied by the petition fee set forth in § 1.17(h).

[47 FR 33086, July 30, 1982, effective Oct. 1, 1982]

§ 1.184 Reconsideration of cases decided by former Commissioners.

Cases which have been decided by one Commissioner will not be reconsidered by his successor except in accordance with the principles which govern the granting of new trials.

APPEAL TO THE BOARD OF APPEALS

AUTHORITY: Secs. 1.191 to 1.198 also issued under 35 U.S.C. 134.

§ 1.191 Appeal to Board of Appeals.

(a) Every applicant for a patent or for reissue of a patent, or every owner of a patent under reexamination, any of the claims of which have been twice rejected, or who has been given a final rejection (§ 1.113), may, upon the payment of the fee set forth in § 1.17(e), appeal from the decision of the examiner to the Board of Appeals within the time allowed for response.

(b) The appeal in an application must identify the rejected claim or claims appealed, and must be signed by the applicant or duly authorized attorney or agent. An appeal in a reexamination proceeding must identify the rejected claim or claims appealed, and must be signed by the patent owner or duly authorized attorney or agent.

(c) Except as otherwise provided by § 1.206, an appeal when taken must be taken from the rejection of all claims under rejection which the applicant or patent owner proposes to contest. Questions relating to matters not affecting the merits of the invention may be required to be settled before an appeal can be considered.

[46 FR 29183, May 29, 1981 and 47 FR 33086, July 30, 1982, effective Oct. 1, 1982]

§ 1.192 Appellant's brief.

(a) The appellant shall, within 2 months from the date of the notice of appeal under § 1.191 in an application, reissue application, or patent under reexamination, or within the time allowed for response to the action appealed from, if such time is later, file a brief in triplicate. The brief must be accompanied by the requisite fee set forth in § 1.17(f) and must set forth the authorities and arguments on which the appellant will rely to maintain the appeal. The brief must include a concise explanation of the invention which should refer to the drawing by reference characters, and a copy of the claims involved. The time periods set forth herein are subject to the provisions of § 1.136.

(b) On failure to file the brief, accompanied by the requisite fee, within the time allowed, the appeal shall stand dismissed.

[36 FR 5850, Mar. 30, 1971, 46 FR 29183, May 29, 1981, 47 FR 33086, July 30, 1982, effective Oct. 1, 1982]

§ 1.193 Examiner's answer.

(a) The primary examiner may, within such time as may be directed by the Commissioner, furnish a written statement in answer to the appellant's brief including such explanation of the invention claimed and of the references and grounds of rejection as may be necessary, supplying a copy to the appellant. If the primary examiner shall find that the appeal is not regular in form or does not relate to an appealable action, he shall so state and a petition from such decision may be taken to the Commissioner as provided in § 1.181.

(b) The appellant may file a reply brief directed only to such new points of argument as may be raised in the examiner's answer, within twenty days from the date of such answer. However, if the examiner's answer states a new ground of rejection appellant may file a reply thereto within two months from the date of such answer; such reply may include any amendment or material appropriate to the new ground.

(c) Any decision pursuant to § 1.56(d) rejecting claims in an application already under appeal of a rejection based on other grounds shall constitute a supplemental examiner's answer introducing a new ground of rejection and removing the suspension of the appeal introduced pursuant to § 1.56(e), in which case appellant may file a reply thereto within two months from the date of the supplemental examiner's answer. Such reply will be considered and responded to as necessary. Appellant may file a reply brief directed to any such response within one month of the date of the response or within such other time as may be set in the response.

[24 FR 10332, Dec. 22, 1959, as amended at 34 FR 18858, Nov. 26, 1969; 47 FR 21752, May 19, 1982]

§ 1.194 Oral hearing.

(a) An oral hearing should be requested only in those circumstances in which the appellant considers such a hearing necessary or desirable for a proper presentation of his appeal. An appeal decided without an oral hearing will receive the same consideration by the Board of Appeals as appeals decided after oral hearing.

(b) If appellant desires an oral hearing, appellant must file a written request for such hearing accompanied by the fee set forth in § 1.17(g) within one month after the date of the examiner's answer. If appellant requests an oral hearing and submits therewith the fee set forth in § 1.17(g), an oral argument may be presented by, or on behalf of, the primary examiner if considered desirable by either the primary examiner or the Board.

(c) If no request and fee for oral hearing have been timely filed by the appellant, the appeal will be assigned for consideration and decision. If the appellant has requested an oral hearing and has submitted the fee set forth in § 1.17(g), a day of hearing will be set, and due notice thereof given to the appellant and to the primary examiner. Hearing will be held as stated in the notice, and oral argument will be limited to twenty minutes for the appellant and fifteen minutes for the primary examiner unless otherwise ordered before the hearing begins.

[42 FR 5595, Jan. 28, 1977 and 47 FR 33086, July 30, 1982, effective Oct. 1, 1982]

§ 1.195 Affidavits or declarations after appeal.

Affidavits, declarations, or exhibits submitted after the case has been appealed will not be admitted without a showing of good and sufficient reasons why they were not earlier presented.

[34 FR 18858, Nov. 26, 1969]

§ 1.196 Decision by the Board of Appeals.

(a) The Board of Appeals, in its decision, may affirm or reverse the decision of the primary examiner in whole or in part on the grounds and on the claims specified by the examiner. The affirmance of the rejection of a claim on any of the grounds specified constitutes a general affirmance of the decision of the primary examiner on that claim, except as to any ground specifically reversed.

(b) Should the Board of Appeals have knowledge of any grounds not involved in the appeal for rejecting any appealed claim, it may include in the decision a statement to that effect with its reasons for so holding, which statement shall constitute a rejection of the claims. The appellant may submit an appropriate amendment of the claims so rejected or a showing of facts, or both, and have the matter reconsidered by the primary examiner. The statement shall be binding upon the primary examiner unless an amendment or showing of facts not previously of record be made which, in the opinion of the primary examiner, avoids the additional ground for rejection stated in the decision. The appellant may waive such reconsideration before the primary examiner and have the case reconsidered by the Board of Appeals upon the same record before them. Where request for such reconsideration is made the Board of Appeals shall, if necessary, render a new decision which shall include all grounds upon which a patent is refused. The appellant may waive reconsideration by the Board of Appeals and treat the decision, including the added grounds for rejection given by the Board of Appeals, as a final decision in the case.

(c) Should the decision of the Board of Appeals include an explicit statement that a claim may be allowed in amended form, appellant shall have the right to amend in conformity with such statement, which shall be binding on the primary examiner in the absence of new references or grounds of rejection.

(d) Although the Board of Appeals normally will confine its decision to a review of rejections made by the primary examiner, should it have knowledge of any grounds for rejecting any allowed claim that it believes should be considered, it may include in its decision a statement to that effect and remand the case to the primary examiner for consideration thereof. In such event, the Board shall set a period, not less than one month, within which the appellant may submit to the primary examiner an appropriate amendment, or a showing of facts or reasons, or both, in order to avoid the grounds set forth in the statement of the Board of Appeals. If the primary examiner rejects the previously allowed claim or claims on the basis of such statement, the appellant may appeal to the Board of Appeals from the rejection. Whenever a decision of the Board of Appeals includes a remand, that decision shall not be considered as a final decision in the case, but the Board of Appeals shall, upon conclusion of the proceedings before the primary examiner on remand, either adopt its decision as final or render a new decision on all of the claims on appeal, as it may deem appropriate.

[24 FR 10332, Dec. 22, 1959, and 46 FR 29183, May 29, 1981]

§ 1.197 Action following decision.

(a) After decision by the Board of Appeals, the case shall be returned to the primary examiner, subject to the appellant's right of appeal or other review, for such further action by the appellant or by the primary examiner, as the condition of the case may require, to carry into effect the decision.

(b) A single request for rehearing or reconsideration, or modification of the decision, may be made if filed within thirty days from the date of the original decision, unless that decision is so modified as to become, in effect, a new decision, and the Board of Appeals so states. Such time may be extended under the provisions of § 1.136.

(c) Proceedings are considered terminated by the dismissal of an appeal or the failure to timely file an appeal to the court

or a civil action (§ 1.304) except: (1) Where claims stand allowed in an application or (2) where the nature of the decision requires further action by the examiner. In such cases, the date of termination of proceedings is the date on which the appeal is dismissed or the date on which the time for appeal to the court or review by civil action (§ 1.304) expires. If an appeal to the court or a civil action has been filed, proceedings are similarly considered terminated when the appeal or civil action is terminated.

[41 FR 757, Jan. 5, 1976, 44 FR 29184, May 29, 1981 and 47 FR 33086, July 30, 1982, effective Oct. 1, 1982]

§ 1.198 Reopening after decision.

Cases which have been decided by the Board of Appeals will not be reopened or reconsidered by the primary examiner except under the provisions of § 1.196 without the written authority of the Commissioner, and then only for the consideration of matters not already adjudicated, sufficient cause being shown.

INTERFERENCES: DEFINITION, PREPARATION, DECLARATION

AUTHORITY: Secs. 1.201 to 1.212 also issued under 35 U.S.C. 135.

§ 1.201 Definition, when declared.

(a) An interference is a proceeding instituted for the purpose of determining the question of priority of invention between two or more parties claiming substantially the same patentable invention and may be instituted as soon as it is determined that common patentable subject matter is claimed in a plurality of applications or in an application and a patent.

(b) An interference will be declared between pending applications for patent, or for reissue, of different parties when such applications contain claims for substantially the same invention, which are allowable in the application of each party, and interferences will also be declared between pending applications for patent, or for reissue, and unexpired original or reissued patents, of different parties, when such applications and patents contain claims for substantially the same invention which are allowable in all of the applications involved, in accordance with the provisions of the regulations in this part.

(c) Interferences will not be declared nor continued, between applications or applications and patents owned by the same party unless good cause is shown therefor. The parties shall make known any and all right, title, and interest affecting the ownership of any application or patent involved or essential to the proceedings, not recorded in the Patent and Trademark Office, when an interference is declared, and of changes in such right, title, or interest, made after the declaration of the interference and before the expiration of the time prescribed for seeking review of the decision in the interference.

§ 1.202 Preparation for interference between applications; preliminary inquiry of junior applicant.

In order to ascertain whether any question of priority arises between applications which appear to interfere and are otherwise ready to be prepared for interference, any junior applicant may be called upon to state in writing under oath or declaration the date and the character of the earliest fact or act, susceptible of proof, which can be relied upon to establish conception of the invention under consideration for the purpose of establishing priority of invention. The statement filed in compliance with this section will be retained by the Patent and Trademark Office separate from the application file and if an interference is declared will be opened simultaneously with the preliminary statement of the party filing the same. In case the junior applicant makes no reply within the time specified, not less than thirty days, or if the earliest date alleged is subsequent to the filing date of the senior party, the interference ordinarily will not be declared.

[24 FR 10332, Dec. 22, 1959, and 34 FR 18858, Nov. 26, 1969]

§ 1.203 Preparation for interference between applications; suggestion of claims for interference.

(a) Before the declaration of interference it must be determined by the examiner that there is common subject matter in the cases of the respective parties, patentable to each of the respective parties, subject to the determination of the question of priority. Claims in the same language, to form the counts of the interference, must be present or be presented, in each application; except that, in cases where, owing to the nature of the disclosures in the respective applications, it is not possible for all applications to properly include a claim in identical phraseology to define the common invention, an interference may be declared, with the approval of the Commissioner, using as a count representing the interfering subject matter a claim differing from the corresponding claims of one or more of the interfering applications, by an immaterial limitation or variation.

(b) When the claims of two or more applications differ in phraseology, but relate to substantially the same patentable subject matter, the examiner shall, if it has been determined that an interference should be declared, suggest to the parties such claims as are necessary to cover the common invention in the same language. The parties to whom the claims are suggested will be required to make those claims (i.e., present the suggested claims in their applications by amendment) within a specified time, not less than 30 days,

in order that an interference may be declared. The failure or refusal of any applicant to make any claim suggested within the time specified shall be taken without further action as a disclaimer of the invention covered by that claim unless the time be extended.

(c) The suggestion of claims for purpose of interference will not stay the period for response to an Office action which may be running against an application, unless the claims are made by the applicant within the time specified for making the claims.

(d) When an applicant presents a claim in his application (not suggested by the examiner as specified in this section) which is copied from some other application, either for purpose of interference or otherwise, he must so state, at the time he presents the claim and identify the other application.

[24 FR 10332, Dec. 22, 1959, and 30 FR 6645, May 14, 1965]

§ 1.204 Interference with a patent; affidavit or declaration by junior applicant.

(a) The fact that one of the parties has already obtained a patent will not prevent an interference. Although the Commissioner has no power to cancel a patent, he may grant another patent for the same invention to a person who, in the interference, proves himself to be the prior inventor.

(b) When the effective filing date of an applicant is three months or less subsequent to the effective filing date of a patentee, the applicant, before the interference will be declared, shall file an affidavit or declaration that he made the invention in controversy in this country before the effective filing date of the patentee, or that his acts in this country with respect to the invention were sufficient to establish priority of invention relative to the effective filing date of the patentee.

(c) When the effective filing date of an applicant is more than 3 months subsequent to the effective filing date of the patentee, the applicant, before the interference will be declared, shall file two copies of affidavits or declarations by himself, if possible, and by one or more corroborating witnesses, supported by documentary evidence if available, each setting out a factual description of acts and circumstances performed or observed by the affiant, which collectively would prima facie entitle him to an award of priority with respect to the effective filing date of the patent. This showing must be accompanied by an explanation of the basis on which he believes that the facts set forth would overcome the effective filing date of the patent. Failure to satisfy the provisions of this section may result in summary judgment against the applicant under § 1.228. Upon a showing of sufficient cause, an affidavit or declaration on information and belief as to the expected testimony of a witness whose testimony is necessary to overcome the filing date of the patent may be accepted in lieu of an affidavit or declaration by such witness. If the examiner finds the case to be otherwise in condition for the declaration of an interference he will consider this material only to the extent of determining whether a date prior to the effective filing date of the patent is alleged, and if so, the interference will be declared. (See also § 1.228.)

[24 FR 10332, Dec. 22, 1959, 29 FR 15866, Nov. 26, 1964; 34 FR 12629, Aug. 2, 1969; and 34 FR 18858, Nov. 26, 1969]

§ 1.205 Interference with a patent; copying claims from patent.

(a) Before an interference will be declared with a patent, the applicant must present in his application, copies of all of the claims of the patent which also define his invention and such claims must be patentable in the application. However, an interference may be declared after copying the claims excluding an immaterial limitation or variation if such immaterial limitation or variation is not clearly supported in the application or if the applicant otherwise makes a statisfactory showing in justification thereof.

(b) Where an applicant presents a claim copied or substantially copied from a patent, he must, at the time he presents the claim, identify the patent, give the number of the patented claim, and specifically apply the terms of the copied claim to his own disclosure, unless the claim is copied in response to a suggestion by the Office. The examiner will call to the Commissioner's attention any instance of the filing of an application or the presentation of an amendment copying or substantially copying claims from a patent without calling attention to that fact and identifying the patent.

(c) A notice that one or more claims of a patent have been copied or substantially copied by an applicant will be placed in the file of the patent, and a copy of said notice will be sent to the patentee. However, the identity of the applicant will not be disclosed to the patentee unless an interference is declared. If a final decision is made not to declare an interference, a notice to that effect will also be placed in the file of the patent and sent to the patentee.

[24 FR 10332, Dec. 22, 1959, 30 FR 6645, May 14, 1965; and 43 FR 28478, June 30, 1978]

§ 1.206 Interference with a patent; claims improperly copied.

(a) Where claims are copied from a patent and the examiner is of the opinion that the applicant can make only some of the claims so copied, he shall notify the applicant to that effect, state why he is of the opinion the applicant cannot make the other claims and state further that the in-

terference will be promptly declared. The applicant may proceed under § 1.231 if he desires to further contest his right to make the claims not included in the declaration of the interference.

(b) Where the examiner is of the opinion that none of the claims can be made, he shall reject the copied claims stating in his action why the applicant cannot make the claims and set a time limit, not less than 30 days, for reply. If, after response by the applicant, the rejection is made final, a similar time limit shall be set for appeal. Failure to respond or appeal, as the case may be, within the time fixed will, in the absence of a satisfactory showing, be deemed a disclaimer of the invention claimed.

[30 FR 6645, May 14, 1965]

§ 1.207 Preparation of interference papers and declaration of interference.

(a) When an interference is found to exist and the applications are in condition therefor, the primary examiner shall forward the files to the Board of Patent Interferences together with a statement indicating the claims of each applicant or patentee which are to form the respective counts of the interference and also indicating whether any party is entitled to the benefit of the filing date of any prior application as to the subject matter in issue, and, if so, identifying such application.

(b) A patent interference examiner will institute and declare the interference by forwarding notices to the several parties to the proceeding. Each notice shall include the name and residence of each of the other parties and those of his attorney or agent, and of any assignee, and will identify the application of each opposing party by serial number and filing date, or in the case of a patentee by the number and date of the patent. The notices shall also specify the issue of the interference, which shall be clearly and concisely defined in only as many counts as may be necessary to define the interfering subject matter (but in the case of an interference with a patent all the claims of the patent which can be made by the applicant should constitute the counts), and shall indicate the claim or claims of the respective cases corresponding to the count or counts. If the primary examiner has indicated that the patent or application of any party included in the interference is entitled to the benefit of the filing date of any prior applications as to the subject matter in issue, the notices shall so state and shall specify such prior applications. Except as noted in paragraph (e) of this section, the notices shall also set a schedule of times for taking various actions as follows:

(1) For filing the preliminary statements required by § 1.215 and serving notice of such filing, not less than 2 months from the date of declaration.

(2) For each party who files a preliminary statement to serve a copy thereof on each opposing party who also files a preliminary statement as required by § 1.215(b), not less that 15 days after the expiration of the time for filing preliminary statements.

(3) For filing motions under § 1.231, not less than 4 months from declaration.

(c) The notices of interference shall be forwarded by the patent interference examiner to all the parties, in care of their attorneys or agents; a copy of the notices will also be sent the patentees in person and, if the patent in interference has been assigned, to the assignees.

(d) When the notices sent in the interest of a patent are returned to the Office undelivered, or when one of the parties resides abroad and his agent in the United States is unknown, additional notice may be given by publication in the *Official Gazette* for such period of time as the Commissioner may direct.

(e) In a case where the showing required by § 1.204(c) is deemed insufficient (§ 1.228) the notice of interference will not set the time schedule specified in paragraph (b) of this section but will be accompanied by an order to show cause by the Board of Patent Interferences as provided by § 1.228.

[30 FR 6645, May 14, 1965, and 43 FR 28478, June 30, 1978]

§ 1.208 Conflicting parties having same attorney.

Whenever it shall be found that two or more parties whose interests appear to be in conflict are represented by the same attorney or agent, the examiner shall notify each of said principal parties and the attorney or agent of this fact, and shall also call the matter to the attention of the Commissioner. If conflicting interests exist, the same attorney or agent or his associates will not be recognized to represent either of the parties whose interests are in conflict without the consent of the other party or in the absence of special circumstances requiring such representation, in further proceedings before the Patent and Trademark Office involving the matter or application or patent in which the conflicting interests exist.

§ 1.211 Jurisdiction of interference.

(a) Upon the institution and declaration of the interference, as provided in § 1.207, the Board of Patent Interferences will take jurisdiction of the same, which will then become a contested case.

(b) The primary examiner will retain jurisdiction of the case until the declaration of interference is made.

[30 FR 6645, May 14, 1965]

§ 1.212 Suspension of ex parte prosecution.

On declaration of the interference, ex parte prosecution of an application is sus-

pended, and amendments and other papers received during the pendency of the interference will not be entered or considered without the consent of the Commissioner, except as provided by the regulations in this part. Proposed amendments directed toward the declaration of an interference with another party will be considered to the extent necessary. Ex parte prosecution as to specified matters may be continued concurrently with the interference, on order from or with the consent of the Commissioner.

INTERFERENCES: PRELIMINARY STATEMENT

AUTHORITY: Secs. 1.215 to 1.228 also issued under 35 U.S.C. 135.

§ 1.215 Preliminary statement required.

(a) Each party to the interference will be required to file a concise preliminary statement giving certain facts and dates, on or before a date fixed by the Office. The preliminary statement must be signed and sworn to or made in the form of a declaration, by the inventor but in appropriate circumstances, as when the inventor is dead or a showing is made of inability to obtain a statement from the inventor, the preliminary statement may be made by the personal representative or assignee or by someone authorized or entitled to make the statement and having knowledge of the facts.

(b) A party who files a preliminary statement shall at the same time notify all opposing parties of that fact and by the time set for that purpose he shall serve a copy of his preliminary statement and all attached documents on every opposing party from whom he has received notification of the filing of a statement.

(c) A party who fails to serve a copy of his preliminary statement as required in paragraph (b) of this section will be restricted to his effective filing date. (See § 1.223(c).)

[30 FR 6645, May 14, 1965, 34 FR 12630, Aug. 2, 1969; and 34 FR 18858, Nov. 26, 1969]

§ 1.216 Contents of the preliminary statement.

(a) The preliminary statement must state that the party made the invention set forth by each count of the interference, and whether the invention was made in the United States or abroad. When the invention was made in the United States the preliminary statement must set forth as to the invention defined by each count the following facts:

(1) The date upon which the first drawing of the invention was made; if a drawing of the invention has not been made prior to the filing date of the application, it must be so stated.

(2) The date upon which the first written description of the invention was made; if a written description of the invention has not been made prior to the filing date of the application, it must be so stated.

(3) The date upon which the invention was first disclosed to another person; if the invention was not disclosed to another person prior to the filing date of the application, it must be so stated.

(4) The date of the first act or acts susceptible of proof (other than making a drawing or written description or disclosing the invention to another person) which, if proven, would establish conception of the invention, and a brief description of such act or acts; if there have been no such acts, it must be so stated.

(5) The date of the actual reduction to practice of the invention; if the invention has not been actually reduced to practice before the filing date of the application, it must be so stated.

(6) The date after conception of the invention when active exercise of reasonable diligence toward reducing the invention to practice began.

(b) When an allegation as to the first drawing (paragraph (a)(1) of this section) and/or as to the first written description (paragraph (a)(2) of this section) is made, a copy of such drawing and/or written description must be attached to the statement. (See § 1.223(c).)

(c) If a party intends to rely solely on a prior application, domestic or foreign, and on no other evidence, the preliminary statement may so state and need not be signed or sworn to or declaration made by the inventor.

[30 FR 6646, May 14, 1965, 34 FR 12630, Aug. 2, 1969; and 34 FR 18858, Nov. 26, 1969]

§ 1.217 Contents of the preliminary statement; invention made abroad.

When the invention was made abroad the facts specified by § 1.216(a) (1) to (6) are not required, and in lieu thereof there should be stated:

(a) When the invention was introduced into this country by or on behalf of the party, giving the circumstances with the dates connected therewith which are relied upon to establish the fact and, when appropriate, including allegations of activity in this country of the nature of that represented by § 1.216(a) (1) to (6) and documentary attachments if the allegations relate to a drawing or written description. Such statement may be signed and sworn to, or made in the form of a declaration, either by the inventor or by one authorized to make the statement and having knowledge of the facts alleged therein.

(b) If a party is entitled to the benefit of the second sentence of 35 U.S.C. 104, he must so state and his preliminary statement must include allegations of activity abroad corresponding to those required by § 1.216(a) (1) to (6).

[43 FR 28478, June 30, 1978; and 43 FR 57886, Dec. 11, 1978]

§ 1.218 Time for filing preliminary statement.

The time for filing the preliminary statement is ordinarily specified in the notices of interference mailed to the parties (§ 1.207). (For extension of the time set see § 1.245.)

[30 FR 6646, May 14, 1965]

§ 1.219 Statements sealed before filing.

The statement must be filed in a sealed envelope bearing the name of the party filing it and the number and title of the interference. The envelope should contain nothing but this statement and if mailed should be enclosed in an outer envelope. The statements may be opened only by an examiner of interferences.

§ 1.222 Correction of statement on motion.

In case of material error arising through inadvertence or mistake, the statement or attachments may be corrected or omitted attachments may be supplied on motion (see § 1.243), upon a satisfactory showing that such action is essential to the ends of justice. The motion must be made, if possible, before the taking of any testimony, and as soon as practicable after the discovery of the error.

[34 FR 12630, Aug. 2, 1969]

§ 1.223 Effect of statement.

(a) The preliminary statement should be carefully prepared, as a party will not be allowed to amend his statement in any way except by motion under § 1.222, and any doubts as to definiteness or sufficiency of any allegation or compliance with formal requirements will be resolved against the party concerned by restriction to his effective filing date or to the latest date of a period alleged as may be appropriate. Prior to final hearing a party will not be notified of any defect in his statement except that a junior party, subject to restriction resulting from such a defect and by virtue of that restriction being subject to judgment under § 1.225, will be notified of that defect and also notified that judgment on the record will be entered against him at the expiration of a time set, not less than 30 days, unless cause be shown why judgment should not be entered. Each of the parties by whom or on whose behalf a preliminary statement is made will be strictly held in his proofs to the dates set forth therein. This includes joint applicants or patentees; a new preliminary statement will not be received in the event the application is amended or the patent is corrected to remove the names of those not inventors, nor will a preliminary statement alleging different dates be received if an application is amended or a patent is corrected to include a joint inventor, except by motion under § 1.222.

(b) If a party proves any date earlier than alleged in his preliminary statement, such proof will be held to establish the date so alleged and none earlier.

(c) If a party to an interference fails to file a statement, testimony will not be received subsequently from him to prove that he made the invention at a date prior to his effective filing date. If a party alleges in his statement a date of first drawing or first written description but does not attach a copy of such drawing or written description as required by § 1.216 (b), he will be restricted to his effective filing date as to that allegation unless such copy is admitted by motion under § 1.222. The content of a drawing or written description attached to the statement normally will not be considered by the Office.

(d) The preliminary statement can in no case be used as evidence in behalf of the party making it.

[24 FR 10332, Dec. 22, 1959, 34 FR 12630, Aug. 2, 1969; and 43 FR 28478, June 30, 1978]

§ 1.224 Reliance on prior application.

A party will not be permitted to rely on any prior application to obtain the benefit of its filing date unless the prior application is specified in the notice of interference (see § 1.226) or its benefit is sought by a motion filed in accordance with § 1.231. In the latter case, complete copies of the contents of the application file the benefit of which is sought, except affidavits or declarations under §§ 1.131, 1.202, and 1.204, must be served on all opposing parties with the motion, and in the case of a foreign application the necessary papers to prove a date of priority under 35 U.S.C. 119 including a translation where required (§ 1.55), must be filed and copies served on all opposing parties with the motion except for such papers as were of record in the involved application when the interference was declared. In either case proof of service required by § 1.247 must include reference to the prior application as well as the motion or, in the case of the stated exception, note that the papers in question were of record when the interference was declared.

[34 FR 12630, Aug. 2, 1969, and 34 FR 18858, Nov. 26, 1969]

§ 1.225 Failure of junior party to file statements or to overcome filing date of senior party.

(a) If a junior party to an interference fails to file a preliminary statement, or if his statement fails to overcome the effective filing date of another party, judgment on the record will be entered against that junior party unless:

(1) Under the provisions of § 1.258(a), he would be entitled to raise before the Board of Patent Interferences a matter which is ancillary to priority and which, if decided in his favor, would remove the

basis for judgment on the record against him, and

(2) Within a time set by the patent interference examiner, not less than 30 days, he requests that final hearing be set to review such matter. If the matter was raised in a motion which was dismissed for one of the reasons specified in § 1.258(a)(1)(iii), the request for final hearing must be accompanied by a motion to take testimony under paragraph (b) of this section.

(b) Such a junior party will not be permitted to take testimony except on granting of a motion accompanied by showing of good cause, which should normally include names of proposed witnesses and affidavits or declarations by them giving their expected testimony.

(c) If, as a result of a decision on motion, the original senior party is deprived of the benefit of an earlier filed application and is thereby made a junior party and if in addition he relies solely on said earlier filed application in his preliminary statement, he stands in the same position as a junior party whose statement fails to overcome the effective filing date of the senior party as in the first sentence of § 1.225(a).

[43 FR 28478, June 30, 1978, and 46 FR 52363, Oct. 27, 1981]

§ 1.226 Access to applications.

After the mailing of the notices of interference each party will be permitted to see or obtain copies of each other's applications which are set out in the notices except for copies of affidavits or declarations filed under §§ 1.131, 1.202, and 1.204 which shall be and remain sealed until preliminary statements are opened under § 1.227, except as provided in § 1.228 regarding affidavits or declarations under § 1.204(c).

[30 FR 6646, May 14, 1965, and 34 FR 18858, Nov. 26, 1969]

§ 1.227 Access to preliminary statements.

(a) The preliminary statements shall be open to the inspection of the senior party, and of any junior party who himself filed a statement, after the date set for the serving of preliminary statements (§ 1.207(b)(2)), but shall not be open to inspection prior to that time.

(b) A junior party who fails to file a preliminary statement shall not have access to the preliminary statement of any other party.

(c) If the interference be terminated before the preliminary statements have been opened to the inspection of the parties, the preliminary statements will remain sealed.

(d) After termination of an interference any unopened statements will be removed from the interference file and preserved by the Office, and in no case will such statements be open to the inspection of anyone (including opposing parties) without authority from the Commissioner.

[30 FR 6646, May 14, 1965]

§ 1.228 Summary judgment.

When an interference is declared on the basis of a showing under § 1.204(c), such showing will be examined by an Examiner of Interferences. If the Examiner considers that the facts set out in the showing provide sufficient basis for the interference to proceed, the interference will proceed in the normal manner as provided by the regulations in this part; otherwise an order shall be entered concurrently with the notice of interference pointing out wherein the showing is insufficient and notifying the applicant making such showing that summary judgment will be rendered against him because of such insufficiency at the expiration of a period specified in the notice, not less than 30 days, unless cause be shown why such action should not be taken. In the absence of a showing of good and sufficient cause, judgment shall be so rendered. Any response made during the specified period will be considered by a Board of Patent Interferences without an oral hearing unless such hearing is requested by the applicant, but additional affidavits, declarations or exhibits will not be considered unless accompanied by a showing in excuse of their omission from the original showing. If the applicant files a response to the order to show cause, the patentee will be furnished with one copy of the showing under § 1.204(c) and will be allowed not less than 30 days from its mailing date within which to present his views with respect thereto. He shall also be entitled to be represented at any oral hearing on the matter. Unless it shall be otherwise ordered before the hearing begins, oral arguments will be limited to not more than 30 minutes for each party. The Board will determine, on the basis of the original showing and the response made, whether the interference should be allowed to proceed or summary judgment should be entered against the junior applicant.

[41 FR 27832, July 7, 1976]

INTERFERENCES: MOTION PERIOD, DISSOLUTION, REFORMATION

AUTHORITY: Secs. 1.231 to 1.238 also issued under 35 U.S.C. 135.

§ 1.231 Motions before the primary examiner.

(a) Within the period set in the notice of interference for filing motions any party to an interference may file a motion seeking:

(1) To dissolve as to one or more counts, except that such motion based on facts sought to be established by affida-

vits, declarations or evidence outside of official records and printed publications will not normally be considered. A motion to dissolve an interference in which a patentee is a party on the ground that the claims corresponding to the counts are unpatentable to the patentee over patents or printed publications will be considered through reexamination if it complies with the requirements of § 1.510(b) and is accompanied by the fee for requesting reexamination set in § 1.20(c). Otherwise, a motion to dissolve an interference in which a patentee is a party will not be considered if it would necessarily result in the conclusion that the claims of the patent which correspond to the counts are unpatentable to the patentee on a ground which is not ancillary to priority. Where a motion to dissolve is based on prior art, service on opposing parties must include copies of such prior art. A motion to dissolve on the ground that there is no interference in fact will not be considered unless the interference involves a design or plant patent or application or unless it relates to a count which differs from the corresponding claim of an involved patent or of one or more of the involved applications as provided in §§ 1.203(a) and 1.205(a).

(2) To amend the issue by addition or substitution of new counts. Each such motion must contain an explanation as to why a count proposed to be added is necessary or why a count proposed to be substituted is preferable to the original count, must demonstrate patentability of the count to all parties and must apply the proposed count to all involved applications except an application in which the proposed count originated.

(3) To substitute any other application owned by him as to the existing issue, or to declare an additional interference to include any other application owned by him as to any subject matter other than the existing issue but disclosed in his application or patent involved in the interference and in an opposing party's application or patent in the interference which should be made the basis of interference with such other party. Complete copies of the contents of such other application, except affidavits or declarations under §§ 1.131, 1.202, and 1.204, must be served on all other parties and the motion must be accompanied by proof of such service.

(4) To be accorded the benefit of an earlier application or to attack the benefit of an earlier application which has been accorded to an opposing party in the notice of declaration. See § 1.224.

(5) To amend an involved application by adding or removing the names of one or more inventors as provided in § 1.45. (See par. (d) of this section.)

(b) Each motion must contain a full statement of the grounds therefor and reasoning in support thereof. Any opposition to a motion must be filed within 20 days of the expiration of the time set for filing motions and the moving party may, if he desires, file a reply to such opposition within 15 days of the date the opposition was filed. If a party files a timely motion to dissolve, any other party may file a motion to amend within 20 days of the expiration of the time set for filing motions. Service on opposing parties of an opposition to a motion to amend which is based on prior art must include copies of such prior art. In the case of action by the primary examiner under § 1.237, such motions may be made within 20 days from the date of the primary examiner's decision on motion wherein such action was incorporated or the date of the communication giving notice to the parties of the proposed dissolution of the interference.

(c) A motion to amend under paragraph (a)(2) of this section or to substitute another application or declare an additional interference under paragraph (a)(3) of this section must be accompanied by an amendment adding claims corresponding to the proposed counts to the application concerned if such claims are not already in that application. The motion must also request the benefit of a prior application as provided for under paragraph (a)(4) of this section if the party concerned expects to be accorded such benefit.

(d) All proper motions as specified in paragraphs (a) and (b) of this section, or of a similar character, will be transmitted to and considered by the primary examiner without oral argument, except that consideration of a motion to dissolve on a ground other than no interference in fact will be deferred to final hearing before a Board of Patent Interferences where the motion raises a matter which would be reviewable at final hearing under § 1.258(a) and such matter is raised against a patentee or has been ruled upon by the Board of Appeals or by a court in ex parte proceedings. Also consideration of a motion to add or remove the names of one or more inventors may be deferred to final hearing if such motion is filed after the times for taking testimony have been set. Requests for reconsideration will not be entertained.

(e) In the determination of a motion to dissolve an interference between an application and a patent, the prior art of record in the patent file may be referred to for the purpose of construing the issue.

(f) Upon the granting of a motion to amend the adoption of the claims by the other parties within a time specified, or upon the granting of a motion to substitute another application, and after the expiration of the time for filing any new preliminary statements, a patent interference examiner shall redeclare the interference or shall declare such other interferences as may be necessary to include said claims. A preliminary statement as to the added claims need not be filed if a

party states that he intends to rely on the original statement and such a declaration as to added claims need not be signed or sworn to by the inventor in person. A second time for filing motions will not be set and subsequent motions with respect to matters which have been once considered by the primary examiner will not be considered.

[30 FR 6647, May 14, 1965, 34 FR 12630, Aug. 2, 1969; 34 FR 18858, Nov. 26, 1969; 38 FR 10005, Apr. 23, 1973; 40 FR 11873, Mar. 14, 1975; 46 FR 29184, May 29, 1981; 46 FR 52363, Oct. 27, 1981 and 47 FR 33086, July 30, 1982; effective Oct. 1, 1982]

§ 1.237 Dissolution at the request of examiner.

If, during the pendency of an interference, a reference or other reason be found which, in the opinion of the primary examiner, renders all or part of the counts unpatentable, the attention of the Board of Patent Interferences shall be called thereto. The interference may be suspended and referred to the primary examiner for consideration of the matter, in which case the parties will be notified of the reason to be considered. Arguments of the parties regarding the matter will be considered if filed within 20 days of the notification. The interference will be continued or dissolved in accordance with the determination by the primary examiner. If such reference or reason be found while the interference is before the primary examiner for determination of a motion, decision thereon may be incorporated in the decision on the motion, but the parties shall be entitled to reconsideration if they have not submitted arguments on the matter.

[30 FR 6647, May 14, 1965]

§ 1.238 Addition of new party by examiner.

If during the pendency of an interference, another case appears, claiming substantially the subject matter in issue, the primary examiner should notify the Board of Patent Interferences and request addition of such case to the interference. Such addition will be done as a matter of course by a patent interference examiner, if no testimony has been taken. If, however, any testimony may have been taken, the patent interference examiner shall prepare and mail a notice for the proposed new party, disclosing the issue in interference and the names and addresses of the interferants and of their attorneys or agents, and notices for the interferants disclosing the name and address of the said party and his attorney or agent, to each of the parties, setting a time for stating any objections and at his discretion a time of hearing on the question of the admission of the new party. If the patent interference examiner be of the opinion that the new party should be added, he shall prescribe the conditions imposed upon the proceedings, including a suspension if appropriate.

[34 FR 12631, Aug. 2, 1969]

INTERFERENCES: MISCELLANEOUS PROVISIONS

AUTHORITY: Secs. 1.242 to 1.248 also issued under 35 U.S.C. 135.

§ 1.242 Prosecution by assignee.

When on motion duly made and upon satisfactory proof, it shall be shown that, by reason of the inability or refusal of the inventor to take suitable action in an interference, or from other cause, the ends of justice require that an assignee of an undivided interest in the invention be permitted to prosecute the same, it may be so ordered.

§ 1.243 Motions before the Board of Patent Interferences.

(a) Motions relating to matters other than those specified in § 1.231 will be determined by a patent interference examiner or the Board of Patent Interferences, as may be deemed appropriate. Such motions shall be made in writing and shall contain a full statement of the action sought and the grounds therefor, and satisfactory proof of any facts required must accompany the motion. Oral hearings will not be held except on order of a patent interference examiner or Board of Patent Interferences. Briefs or memoranda in support of such motions shall accompany the motion. Any opposition to the motion, together with any brief or memorandum in support thereof, shall be filed within 20 days from the date of service of the motion unless some other date is set by the patent interference examiner.

(b) Typewritten briefs may be used in connection with all motions. By stipulation of the parties subject to approval or by order of the tribunal before whom the motion is pending, briefs may be received if filed otherwise than as prescribed.

(c) In oral hearings on motions, the moving parties shall have the right to make the opening and closing arguments. Unless otherwise ordered before the hearing begins, oral arguments will be limited to 30 minutes for each party.

(d) Any request for reconsideration or modification of a decision or other action by the Board of Patent Interferences or patent interference examiner, must be filed within 20 days after the date of the decision, or other action and any reply thereto must be filed within 20 days from the date of service of the request. With regard to requests for reconsideration of a decision after final hearing, see § 1.256(b).

[41 FR 27832, July 7, 1976]

§ 1.244 Petition to the Commissioner from decisions on motions.

There is no appeal from decisions rendered on motions, but the Commissioner may consider on petition any matter involving abuse of discretion or the exercise of his supervisory authority, or such other matters as he may deem proper to consider. Any such petition must comply with § 1.181 and, if not filed within 20 days from the decision complained of, may be dismissed as untimely. Any opposition thereto must be filed within 20 days from the date of service of the petition.

[41 FR 27832, July 7, 1976]

§ 1.245 Extension of time.

Extensions of time in any interference proceeding not otherwise provided for may be had by stipulation of the parties, subject to approval, or on motion duly brought, sufficient cause being shown for such extension. The provisions of § 1.136 do not apply to time periods in interferences.

[43 FR 28478, June 30, 1978 and 47 FR 33086, July 30, 1982, effective Oct. 1, 1982]

§ 1.246 Late papers.

A motion or other paper belatedly filed will not normally be considered except upon a showing, under oath or in the form of a declaration (§ 1.68), of sufficient cause as to why such motion or paper was not timely presented. The provisions of § 1.136 do not apply to time periods in interferences.

[43 FR 28478, June 30, 1978 and 47 FR 33086, July 30, 1982, effective Oct. 1, 1982]

§ 1.247 Service of papers.

(a) Every paper filed in the Patent and Trademark Office in interference proceedings must be served upon the other parties in the manner provided in § 1.248, except the following:

(1) Preliminary statements at the time of filing but see § 1.215 (b) and (c).

(2) Documentary exhibits introduced at the taking of a deposition.

(3) Certified transcripts of testimony under § 1.276 (but copies of the record must be served (§ 1.253(a)).

(4) Statutory disclaimers under 35 U.S.C. 253.

(b) The specification in certain sections that a designated paper must be served does not imply that other papers, not excepted above need not be served. However, the requirement for service of designated papers may be waived under particular circumstances and service may be required of other designated papers which need not ordinarily be served. Proof of service must be made before the paper will be considered in the interference by the Office. A statement of the attorney, attached to or appearing in the original paper when filed, clearly stating the time and manner in which service was made will be accepted as prima facie proof of service.

[43 FR 28478, June 30, 1978]

§ 1.248 Service of papers; manner of service; proof of service.

(a) Service of papers must be on the attorney or agent of the party if there be such or on the party if there is no attorney or agent, and may be made in any of the following ways:

(1) By delivering a copy of the paper to the person served;

(2) By leaving a copy at the usual place of business of the person served with someone in his employment;

(3) When the person served has no usual place of business, by leaving a copy at the person's residence, with some person of suitable age and discretion who resides there;

(4) Transmission by first class mail. When service is by mail the date of mailing will be regarded as the date of service;

(5) Whenever it shall be satisfactorily shown to the Commissioner that none of the above modes of obtaining or serving the paper is practicable, service may be by notice published in the *Official Gazette*.

(b) Papers filed in the Patent and Trademark Office which are required to be served shall contain proof of service. Proof of service may appear on or be affixed to papers filed. Proof of service shall include the date and manner of service. In the case of personal service, proof of service shall also include the name of any person served, certified by the person who made service. Proof of service may be made by: (1) An acknowledgement of service by or on behalf of the person served or (2) a statement signed by the attorney or agent containing the information required by this section.

[46 FR 29184, May 29, 1981]

INTERFERENCES: TRIAL

AUTHORITY: Secs. 1.251 to 1.259 also issued under 35 U.S.C. 135.

§ 1.251 Assignment of times for discovery and taking testimony.

(a) Subject to the exception provided in paragraph (c) of this section, a period for preparation for testimony will be set in which all parties should complete discovery and other preparatory activities, except for service by the senior party required by § 1.287(a)(1) which is governed by § 1.287(a)(2)(iii).

(b) Subject to the exception provided in paragraph (c) of this section, times will be assigned in which the junior party shall complete his testimony in chief, and in

which the other party shall complete the testimony on his side, and a further time in which the junior party may take rebutting testimony, but he shall take no other testimony. If there be more than two parties to the interference, the times for taking testimony will be so arranged that each shall have an opportunity to prove his case against prior parties and to rebut their evidence, and also to meet the evidence of junior parties. If a senior party fails to file a preliminary statement, or expressly elects to rely solely on his effective filing date, he will be assigned only a time for taking rebuttal testimony, and no junior party will be assigned a time for taking rebuttal testimony unless another junior party senior to him is assigned a time for taking testimony in chief. But, subject to the conditions imposed upon junior parties by § 1.225, such senior party may be assigned a period for taking testimony concerning a matter raised by a motion under § 1.231.

(c) Times for preparation of testimony, for compliance with § 1.287(a) and for taking of testimony will ordinarily be assigned in notices sent to the parties after motions under § 1.231 have been disposed of or, if no such motions have been filed, after the close of the motion period (§ 1.231). Such times will not normally be assigned for a junior party who fails to file a preliminary statement or whose preliminary statement fails to overcome the effective filing date of the senior party. (See § 1.225).

(d) Testimony shall be taken during the times assigned in accordance with §§ 1.271 to 1.286.

(e) The date for final hearing will ordinarily be set in separate notices.

[36 FR 8733, May 12, 1971, 38 FR 10005, Apr. 23, 1973; and 40 FR 11873, Mar. 14, 1975]

§ 1.252 Failure of junior party to take testimony.

Upon the filing of a motion for judgment by any senior party to an interference stating that the time for taking testimony on behalf of any junior party has expired and that no testimony has been taken and no other evidence offered by said junior party, an order shall be entered that the junior party show cause within a time set therein, not less than 10 days, why judgment should not be rendered against him, and in the absence of a showing of good and sufficient cause, judgment shall be so rendered. In the absence of such a motion, if any junior party fails to file an evidentiary record by the date set as provided in § 1.253(d), a patent interference examiner shall enter the order to show cause.

[34 FR 12631, Aug. 2, 1969]

§ 1.253 Copies of the testimony.

(a) In addition to the certified transcript of the testimony (§§ 1.275 to 1.278) or executed copies of affidavits or stipulated testimony or facts (§ 1.272), and the exhibits, three true copies of the testimony of each party must be filed for the use of the Office (a total of four copies), and one true copy must be served upon each of the opposing parties. Only one set of exhibits need be filed in the Office.

(b) These copies of the testimony may be submitted either in printed or in typewritten form.

(c) These copies, whether printed or typewritten, must include the testimony presented by the party filing the same, a copy of the counts of the interference, an index of the names of the witnesses, giving the pages where their examination and cross-examination begin, and an index of the exhibits, briefly describing their nature and giving the pages at which they are introduced and offered in evidence. The pages must be serially numbered throughout the entire record of testimony and the names of the witnesses must appear at the top of the pages over their testimony.

(d) The copies of the testimony for all parties must be filed and served on the opposing parties by the date specified in the order setting times for taking testimony or such extensions as may be granted.

(e) When the copies of the testimony are submitted in printed form, they may be produced by standard typographic printing or by any process capable of producing a clear black permanent image. All printed matter except on covers must appear in at least 11 point type on opaque, unglazed paper. Margins must be justified. Footnotes may not be printed in type smaller than 9 point. The page size shall be 8½ by 11 inches (21.8 × 27.9 cm.) with type matter 6½ by 9½ inches (16.5 × 24.1 cm.). The testimony shall be bound to lie flat when open.

(f) When the copies of the testimony are submitted in typewritten form, they must be clearly legible on opaque, unglazed, durable paper approximately 8½ by 11 inches (21.6 by 27.9 cm.) in size (letter size) and one of the three copies must be a ribbon copy, but need not be executed by the certifying officer. (The certified transcript may be a properly executed carbon copy. See § 1.277.) The typing shall be on one side of the paper, in not smaller than pica-type; and double-spaced with a margin of 1½ inches (3.8 cm.) on the left-hand side of the page. The sheets shall be bound at their left edges, in such manner to lie flat when opened, in a volume or volumes of convenient size (approximately 100 pages per volume is suggested) provided with covers. Documentary exhibits should not be included in bound volumes of testimony. Multigraphed or otherwise reproduced copies conforming to the standards specified will be accepted.

(g) The testimony of any party failing to supply copies thereof as specified may be refused consideration.

[40 FR 11873, Mar. 14, 1975, as amended at 46 FR 52363, Oct. 27, 1981; 47 FR 47380, Oct. 26, 1982; effective Oct. 26, 1982]

§ 1.254 Briefs at final hearing.

Briefs at final hearing before the Board of Patent Interferences shall be submitted in printed form, except that when not in excess of 50 legal-size double-spaced typewritten pages, or the equivalent thereof, and in any other case where satisfactory reason therefor is shown they may be submitted in typewritten form. If submitted in printed form, they shall be the same in size and the same as to page and print as is specified for printed copies of testimony. Typewritten briefs shall conform to the requirements for typewritten copies of testimony, except that legal-size paper may be used and the binding and covers specified are not required. Every brief of more than 15 pages shall contain a subject index with page references, supplemented by a list of all authorities referred to, together with references to pages thereof. Three copies of each brief must be filed. The times for filing briefs will be set at an appropriate stage in the proceeding prior to final hearing. The brief for the junior party shall present a full, fair statement of the questions involved, including his position with respect to priority evidence on behalf of other parties, and a clear statement of the points of law or fact upon which he relies. The main brief for each party shall contain a copy of the counts in interference. The board may refuse to accept any brief which has been printed, typewritten, or bound otherwise than in substantial conformity with this section.

[41 FR 27832, July 7, 1976, and 46 FR 52363, Oct. 27, 1981]

§ 1.255 Request for findings of fact and conclusions of law.

Either party may, in his brief, submit concise proposed findings of fact, supported by specific references to and analysis of the record, and conclusions of law, supported by citation of authorities. The opposing party may, in his brief in reply thereto, accept any such proposed findings, or reject any proposed findings giving the reasons therefor, and may likewise submit proposed findings. The Board of Patent Interferences may, in its discretion, adopt the proposed findings in whole or in part.

§ 1.256 Final hearing.

(a) Final hearings will be held by the Board of Patent Interferences on the day appointed at the designated time. If either party appears at the proper time, he will be heard. After the day of hearing, the case will not be taken up for oral argument except by consent of all parties. If the Board of Patent Interferences be prevented from hearing the case at the time specified, a new assignment will be made, or the case will be continued from day to day until heard. Unless it shall be otherwise ordered before the hearing begins, oral arguments will be limited to not more than one hour for each party. A junior party may reserve a portion of his time for rebuttal purposes, but a full, fair opening of his case must be made, including his position with respect to the case presented on behalf of other parties. After a contested case has been argued nothing further relating thereto will be heard unless upon request of the Board of Patent Interferences.

(b) Any request for rehearing or reconsideration, or modification of the decision after final hearing, must be filed within 30 days from the date of the original decision, unless that decision is so modified as to become, in effect, a new decision, and the Board of Patent Interferences so states. Any reply thereto must be filed within 15 days from the filing of the request. The times specified herein may be extended by the Board of Patent Interferences upon a showing of sufficient cause. (See § 1.304.)

[41 FR 27833, July 7, 1976]

§ 1.257 Burden of proof.

(a) The parties to an interference will be presumed to have made their inventions in the chronological order of the filing dates of their applications for patents involved in the interference or the effective filing dates which such applications have been accorded; and the burden of proof will rest upon the party who shall seek to establish a different state of facts.

(b) The termination of the interference by dissolution under § 1.231 or § 1.237, without an award of priority, or by an award of priority based solely upon ancillary matters, shall not disturb this presumption, and a party under these circumstances enjoying the status of a senior party with respect to any subject matter of his application shall not be deprived of any claim to such subject matter solely on the ground that such claim was not added to the interference by amendment under § 1.231.

[24 FR 10332, Dec. 22, 1959, and 31 FR 7285, May 19, 1966]

§ 1.258 Matters considered in determining priority.

(a) In determining priority of invention, the Board of Patent Interferences will consider only priority of invention on the evidence submitted, and matters ancillary thereto. A party shall be entitled to raise a matter which is ancillary to priority only if:

(1) The matter was raised by the party in a motion under § 1.231(a), and:

(i) The motion was transmitted to and decided by the primary examiner; or

(ii) Consideration of the motion was deferred to final hearing; or

(iii) The motion was dismissed as being based on facts sought to be established by affidavits, declarations or evidence outside of official records and printed publications, or as being based on a ground which would require the taking of testimony; or

(2) The matter was raised by the party in opposition to a motion under § 1.231(a)(2), (3), (4) or (5) which was granted over his opposition; or

(3) The party shows good reason why the matter was not raised as specified in paragraphs (a)(1) or (a)(2) of this section.

(b) To prevent manifest injustice the Board of Patent Interferences may in its discretion consider a matter which is ancillary to priority even though it would not otherwise be entitled to consideration under paragraph (a) of this section.

(c) At final hearing between an application and a patent the prior art of record in the patent file may be referred to for the purpose of construing the issue.

[46 FR 52363, Oct. 27, 1981]

§ 1.259 Recommendation by Board of Patent Interferences.

The Board of Patent Interferences may, either before or concurrently with their decision on the question of priority, but independently of such decision, direct the attention of the Commissioner to any matter not relating to priority which may have come to their notice, and which in their opinion establishes the fact that no interference exists, or that there has been irregularity in declaring the same, or which amounts to a bar to the grant of a patent to either of the parties for the claim or claims in interference. The Commissioner may suspend the interference and remand the case to the primary examiner for his consideration of the matters to which attention has been directed if such matters have not been considered before by the examiner, or take other appropriate action. If the case is not so remanded, the primary examiner will, after judgment on priority, consider such matters, unless the same shall have been previously disposed of by the Commissioner.

INTERFERENCES: TERMINATION

AUTHORITY: Secs. 1.261 to 1.267 also issued under 35 U.S.C. 135.

§ 1.261 Termination of interference.

An interference will be terminated by judgment after final hearing (§§ 1.251 to 1.259), or by judgment on the record as provided by § 1.225 or § 1.252, or by summary judgment because of an insufficient showing under § 1.204(c) as provided by § 1.228, or by dissolution as provided by § 1.231 or § 1.237, or as otherwise provided.

[30 FR 6648, May 14, 1965]

§ 1.262 Disclaimer, concession, abandonment.

(a) An applicant or a patentee involved in an interference may, at any time, file a written disclaimer or concession of priority, or abandonment of the invention, signed by the inventor in person with the written consent of the assignee when there has been an assignment. Upon the filing of such an instrument by any party, judgment shall be rendered against him.

(b) An applicant, except an applicant for reissue having a claim or claims from his patent in the interference, may at any time prior to the taking of testimony, and at any time thereafter with the consent of all of the other parties involved, avoid the continuance of the interference as to all counts by filing a written abandonment of the contest or of the application, signed by the inventor in person with the written consent of the assignee when there has been an assignment. Upon the filing of such abandonment of the contest or of the application, the interference shall be dissolved as to that party, but such dissolution shall in subsequent proceedings have the same effect with respect to the party filing the same as an adverse award of priority.

(c) Upon a showing of sufficient cause, the disclaimer, or abandonment of the invention, or abandonment of the contest or of the application above referred to, may be executed and filed by the assignee of the entire interest. A concession of priority may not be made by an assignee.

(d) Such disclaimer, concession of priority, abandonment of the invention, or abandonment of the contest shall operate without further action as a direction to cancel the claims involved from the application of the party making the same on termination of the interference on the basis thereof.

§ 1.263 Statutory disclaimer by patentee.

The disclaimer referred to in § 1.262, when made by a patentee in interference is not a disclaimer under 35 U.S.C. 253. If a disclaimer under the statute and the fee set forth in § 1.20(d) (see § 1.321) cancelling claims involved in the interference from the patent, is made by the patentee, including all assignees as shown by the records of the Patent and Trademark Office, the interference will be dissolved pro forma as to such claims.

[47 FR 33086, July 30, 1982; effective Oct. 1, 1982]

§ 1.264 Reissue filed by patentee.

If a patentee in interference files an application for reissue during the interference, omitting the claims involved (for the purpose of avoiding the interference), the application will be examined and such examination will include the question of patentability over the issue of the interference and over the application of the other

party. The interference will not be terminated unless a reissue is granted excluding claims to the conflicting subject matter, whereupon the interference will be dissolved. If a reissue application is filed for other purposes, it may be held subject to the outcome of the interference. An application for reissue will not be included in the interference on the basis of new claims presented by the reissue unless a motion to that effect is brought during the motion period or any delay adequately explained.

§ 1.265 Status of claims of defeated applicant after interference.

Whenever an award of priority has been rendered in an interference proceeding and the limit of appeal from such decision has expired, the claim or claims constituting the issue of the interference in the application of the defeated or unsuccessful applicant or applicants stand finally disposed of without further action by the examiner and are not open to further ex parte prosecution.

§ 1.266 Action after interference.

(a) After the termination of the interference, the primary examiner will promptly take such action in each of the applications involved as may be necessary. Amendments presented during the interference shall not be entered except as otherwise provided; amendments required to accompany motions to amend shall be entered only to the extent the motion was granted (matter not entered may be subsequently presented by the applicant, subject to the sections relating to amendments, provided the prosecution of the application is not otherwise closed). The examiner will act on any matter requiring action and call for response to any examiner's action unresponded to.

(b) After judgment of priority, the application of any party may be held subject to further examination, including interference with other applications.

§ 1.267 Second interference.

A second interference between the same parties will not be declared upon another application for patent for the same invention filed by either party.

§ 1.268 Filing of interference settlement agreements.

(a) Any agreement or understanding between parties to an interference, including any collateral agreements referred to therein, made in connection with or in contemplation of the termination of the interference, must be in writing and a true copy thereof filed in the Patent and Trademark Office, directed to the Board of Patent Interferences, before the termination of the interference as between the said parties to the agreement or understanding.

(b) If any party filing the agreement or understanding pursuant to paragraph (a) of this section so requests, the copy will be kept separate from the file of the interference, and made available only to Government agencies on written request, or to any person upon petition accompanied by the fee set forth in § 1.17(i) and on a showing of good cause.

(c) Failure to file the copy of the agreement or understanding pursuant to paragraph (a) of this section, will render permanently unenforceable such agreement or understanding and any patent of the parties involved in the interference or any patent subsequently issued on any application of the parties so involved. The Commissioner may, however, upon petition accompanied by the fee set forth in § 1.17(h) and on a showing of good cause for failure to file within the time prescribed, permit the filing on the agreement or understanding during the six-month period subsequent to the termination of the interference as between the parties to the agreement or understanding.

[47 FR 33086, July 30, 1982; effective Oct. 1, 1982]

TESTIMONY IN INTERFERENCES AND OTHER CONTESTED CASES

AUTHORITY: Secs. 1.271 to 1.286 also issued under 35 U.S.C. 23, 135.

§ 1.271 Evidence must comply with rules.

Evidence touching the matter at issue which shall not have been taken and filed in compliance with this part will not be considered in determining the interference or other proceeding.

§ 1.272 Manner of taking testimony of witnesses.

(a) The testimony of witnesses shall be taken by depositions on oral examination in accordance with the regulations in this part.

(b) If the parties so stipulate in writing, deposition may be taken before any person authorized to administer oaths, at any place, upon any notice, and in any manner, and when so taken may be used like other depositions. By agreement of the parties, provided the Commissioner consent, testimony may be taken before an officer or officers of the Patent and Trademark Office under such terms and conditions as the Commissioner may prescribe.

(c) By agreement of the parties, the testimony of any witness or witnesses of any party may be submitted in the form of an affidavit by such witness or witnesses. The parties may stipulate what a particular witness would testify to if called, or the facts in the case of any party may be stipulated. When evidence is submitted in one of these forms, four copies of such affidavit or stipulated testimony (§ 1.253 (a), (c), (f)) are required.

[24 FR 10332, Dec. 22, 1959, and 38 FR 10005, Apr. 23, 1973]

§ 1.273 Notice of examination of witnesses.

(a) Before the depositions of witnesses shall be taken by a party, due notice in writing shall be given to the opposing party or parties, as provided in § 1.248, of the time when and place where the depositions will be taken, of the cause or matter in which they are to be used, and the name and address of each witness to be examined; if the name of a witness is not known a general description sufficient to identify him or the particular class or group to which he belongs, together with a satisfactory explanation, may be given instead. The opposing party shall have full opportunity, either in person or by attorney, to cross-examine the witnesses. If the opposing party shall attend the examination of witnesses not named in the notice, and shall either cross-examine such witnesses or fail to object to their examination, he shall be deemed to have waived his right to object to such examination for want of notice. Neither party shall take testimony in more than one place at the same time, nor so nearly at the same time that reasonable opportunity for travel from one place of examination to the other cannot be had.

(b) The notice for taking testimony must be served (unless otherwise stipulated in an instrument in writing filed in the case) upon the attorney of record, if there be one, or, if there be no attorney of record, upon the adverse party. Reasonable time must be given therein for such adverse party to reach the place of examination. Such notice shall, with a statement signed by the attorney as to the fact, time, and mode of service thereof, be attached to the deposition or depositions, whether the opposing party shall have cross-examined or not.

§ 1.274 Persons before whom depositions may be taken.

(a) Within the United States, or within a territory or insular possession of the United States, depositions shall be taken before an officer authorized to administer oaths by the laws of the United States or of the place where the examination is held.

(b) No such officer who is a relative or employee of either of the parties, or of their attorneys or agents, or interested, directly or indirectly, in the matter in controversy, either as counsel, attorney, agent or otherwise, shall be competent to take depositions, unless with the written consent of all the parties.

§ 1.275 Examination of witnesses.

(a) Each witness before testifying shall be duly sworn according to law by the officer before whom his deposition is to be taken.

(b) The testimony shall be taken in answer to interrogatories, with the questions and answers recorded in their regular order by the officer, or by some other person (who shall be subject to the provisions of § 1.274(b)), in the presence of the officer except when his presence is waived on the record by agreement of the parties. The testimony shall be taken stenographically and transcribed, unless the parties present agree otherwise.

(c) In the absence of all opposing parties and their attorneys or agents, testimony may be taken in longhand, typewriting, or stenographically.

(d) All objections made at the time of the examination to the qualifications of the officer taking the deposition, or to the manner of taking it, or to the evidence presented, or to the conduct of any party and any other objection to the proceedings, shall be noted by the officer upon the deposition. Evidence objected to shall be taken subject to the objections.

(e) When the testimony has been transcribed, the deposition shall be carefully read over by the witness, or by the officer to him, and shall then be signed by the witness in the presence of the officer unless the reading and the signature be waived on the record by agreement of all parties.

§ 1.276 Certification and filing by officer.

The officer shall annex to the deposition his certificate showing: (a) Due administration of the oath by the officer to the witness before the commencement of his testimony; (b) the name of the person by whom the testimony was taken down, and whether, if not taken down by the officer, it was taken down in his presence; (c) the presence or absence of the adverse party; (d) the place, day, and hour of commencing and taking the deposition; (e) that the deposition was read by or to the witness before he signed the same, and that he signed the same in the presence of the officer; and (f) the fact that the officer was not disqualified as specified in § 1.274. If any of the foregoing requirements are waived, the certificate shall so state. The officer shall sign the certificate and affix thereto his seal of office, if he have such seal. Unless waived on the record by agreement, he shall then, without delay, securely seal in an envelope all the evidence, notices, and paper exhibits, inscribe upon the envelope a certificate giving the number and title of the case, the name of each witness, and the date of sealing, address the package, and forward the same to the Commissioner of Patents and Trademarks. If the weight or bulk of an exhibit shall exclude it from the envelope, it shall, unless waived on the record by agreement of all parties, be authenticated by the officer and transmitted in a separate package, marked and addressed as provided in this section.

§ 1.277 Form of deposition.

(a) The testimony must be written on letter size paper, with a wide margin on the left-hand side of the page, and with the writing on one side only of the sheet. The pages must be serially numbered throughout the entire record for each party (§ 1.253(c)) and the name of the witness must be plainly and conspicuously written at the top of each page. The questions propounded to each witness must be consecutively numbered, unless paper with numbered lines is used, and each question must be followed by its answer.

(b) In order to have a ribbon copy of the testimony available as required by § 1.253(f), a carbon copy of the deposition may be executed by the witnesses and the officer and filed as required by § 1.276.

(c) Exhibits must be numbered or lettered consecutively and each must be marked with the number and title of the case and the name of the party offering the exhibit. Entry and consideration may be refused to improperly marked exhibits.

[24 FR 10332, Dec. 22, 1959, 38 FR 10005, Apr. 23, 1973; and 40 FR 11874, Mar. 14, 1975]

§ 1.278 Depositions must be filed.

All depositions which are taken must be duly filed in the Patent and Trademark Office. On refusal to file, the Office at its discretion will not further hear or consider the contestant with whom the refusal lies; and the Office may, at its discretion, receive and consider a copy of the withheld deposition, attested by such evidence as is procurable.

§ 1.279 Inspection of testimony.

After testimony is filed in the Office, it may be inspected by any party to the case, but it cannot be withdrawn for the purpose of printing. It may be printed by someone specially designated by the Office for that purpose, under proper restrictions.

§ 1.281 Additional time for taking testimony.

If either party has proceeded with the taking of testimony on his behalf but is unable to complete his case because of inability to procure the testimony of a witness or witnesses within the time limited and said time has expired, and he desires additional time for such purpose, he must file a motion, accompanied by a statement under oath or in the form of a declaration setting forth specifically the cause of such inability, the name or names of the witness or witnesses, the facts expected to be proved by such witness or witnesses, the steps which have been taken to procure such testimony, and the dates on which efforts have been made to procure it. (See § 1.245 for extensions of time in other situations.)

[38 FR 10005, Apr. 23, 1973]

§ 1.282 Official records and printed publications.

(a) Official records and any special matter contained in a printed publication, if competent evidence and pertinent to the issue, may be introduced in evidence by filing in the Patent and Trademark Office a notice to that effect, before the closing of the time for taking the testimony of the party (before the time for taking the testimony in chief if such matters are not in rebuttal), specifying the record or the printed publication, the page or pages thereof to be used, indicating generally its relevancy, and accompanied by the record or authenticated copy, or the printed publication or a copy. The notice and copies of the record or publication must be served on each of the other parties.

(b) In the case of prior applications, the filing date of which is claimed, compliance with the requirements of §§ 1.224 and 1.231 is sufficient notice under this section.

[24 FR 10332, Dec. 22, 1959, and 30 FR 6648, May 14, 1965]

§ 1.283 Testimony taken in another interference or action.

Upon motion, supported by a showing demonstrating its relevance and materiality to the issue, duly made and granted, testimony taken in another interference proceeding or action, between the same parties or those in interest, may be used in an interference proceeding, subject, however, to the right of any contesting party to recall or demand the recall of witnesses whose testimony has been taken and who are physically and mentally able to testify, and to take other testimony in rebuttal of the testimony.

[34 FR 12632, Aug. 2, 1969]

§ 1.284 Testimony taken in foreign countries.

Upon motion duly made and granted, testimony may be taken in foreign countries, upon complying with the following requirements:

(a) The motion must designate a place for the examination of the witnesses at which an officer duly qualified to take testimony under the laws of the United States in a foreign country shall reside and it must be accompanied by a statement under oath that the motion is made in good faith, and not for the purposes of delay or of vexing or harassing any party to the case; it must also set forth the names of the witnesses, the particular facts to which it is expected each will testify, and the grounds on which is based the belief that each will so testify.

(b) It must be demonstrated that the testimony desired is material and competent, and that it cannot be taken in this country at all, or cannot be taken here without hardship and injury to the moving party greatly exceeding that to which

the opposite party will be exposed by the taking of such testimony abroad.

(c) Upon the granting of such motion a time will be set within which the moving party shall file in duplicate the interrogatories to be propounded to each witness, and serve a copy of the same upon each adverse party, who may, within a designated time, file in duplicate cross-interrogatories. Objections to any of the interrogatories or cross-interrogatories may be filed at any time before the depositions are taken and such objections will be considered and determined upon the hearing of the case.

(d) As soon as the interrogatories and cross-interrogatories are decided to be in proper form, the Commissioner will cause them to be forwarded to the proper officer, with the request that, upon payment of, or satisfactory security for, his official fees, he notify the witnesses named to appear before him within a designated time and make answer thereto under oath; and that he reduce their answers to writing, and transmit the same, under his official seal and signature, to the Commissioner of Patents and Trademarks with the certificate prescribed in § 1.276.

(e) By stipulation of the parties the requirements of paragraph (c) of this section as to written interrogatories and cross-interrogatories may be dispensed with, and the testimony may be taken before the proper officer upon oral interrogatories by the parties, their attorneys or their agents.

(f) Unless false swearing in the giving of such testimony before the officer taking it shall be punishable as perjury under the laws of the foreign state in which it shall be taken, it will not stand on the same footing in the Patent and Trademark Office as testimony duly taken in the United States; but its weight in each case will be determined by the tribunal having jurisdiction of such case.

[24 FR 10332, Dec. 22, 1959, and 34 FR 12632, Aug. 2, 1969]

§ 1.285 Effect of errors and irregularities in depositions.

Notice will not be taken of merely formal or technical objections which shall not appear to have wrought a substantial injury to the party raising them; and in case of such injury it must be made to appear that, as soon as the party became aware of the ground of objection, he gave notice thereof.

(a) *As to notice.* All errors and irregularities in the notice for taking a deposition are waived unless objection is promptly made and served in writing upon the party giving the notice.

(b) *As to disqualification of officer.* Objection to taking a deposition because of disqualification of the officer before whom it is to be taken is waived unless made before the taking of the deposition begins or as soon thereafter as the disqualification becomes known or could be discovered with reasonable diligence.

(c) *As to taking of deposition.* (1) Objections to the competency of a witness or to the competency, relevancy, or materiality of testimony are not waived by failure to make them before or during the taking of the deposition, unless the ground of the objection is one which might have been obviated or removed if presented at that time.

(2) Errors and irregularities occurring at the oral examination in the manner of taking the deposition, in the form of the questions or answers, in the oath or affirmation, or in the conduct of the parties, and errors of any kind which might be obviated, removed, or cured if promptly presented, are waived unless seasonable objection thereto is made at the taking of the deposition.

(d) *As to completion and return of deposition.* Errors and irregularities in the manner in which the testimony is transcribed or the deposition is prepared, signed, certified, sealed, indorsed, transmitted, filed, or otherwise dealt with by the officer are waived unless a motion to suppress the deposition or some part thereof is made with reasonable promptness after such defect is, or with due diligence might have been, ascertained.

§ 1.286 Objections to admissibility.

Subject to the provisions of § 1.285, objection may be made to receiving in evidence any deposition or part thereof, or any other evidence, for any reason which would require the exclusion of the evidence according to the established rules of evidence, which will be applied strictly by the Office.

§ 1.287 Discovery.

(a)(1) Each party who expects to take testimony must serve on each opposing party who requests service the following:

(i) A copy of each document in his possession, custody, or control and upon which he intends to rely,

(ii) A list of and a proffer of reasonable access to things in his possession, custody, or control and upon which he intends to rely, and

(iii) A list giving the names and addresses of all persons whom he intends to call as witnesses and indicating the relationship of each person to the invention in issue.

(2) Dates for compliance with paragraph (a)(1) of this section will be set in accordance with the following:

(i) The date by which all parties may request service shall be not less than 10 days from the date of the order setting testimony times;

(ii) The date for service by all junior parties shall be not less than 30 days from the date of the order setting such times;

(iii) The date for service by the senior party shall be not less than 10 days from

the date set for the close of testimony in chief of all junior parties.

(3) Where more than two parties are involved and one of the junior parties is not entitled to take testimony as to a more senior party, the requirements of paragraphs (a) (1) and (2) of this section shall not be applicable as between such parties.

(b) The provisions of paragraph (a) of this section are without prejudice to the right of a party, where appropriate, to obtain production of documents or things during cross-examination of an opponent's witness or during his own period for rebuttal testimony.

(c) Upon motion (§ 1.246) brought by a party during the period for preparation for testimony, or thereafter as authorized under § 1.246, and upon a showing that the interest of justice so requires, the Board of Patent Interferences may order additional discovery as to matters under the control of a party within the scope of the discovery rules of the Federal Rules of Civil Procedure, specifying the terms and conditions of such additional discovery. An order by the Board granting or denying a motion under this paragraph shall not be subject to review prior to a decision awarding priority.

(d)(1) A party will not be permitted to rely on any document or thing in his possession, custody, or control, or on any witness, not listed and served by that party as required by paragraph (a) of this section, except upon a promptly filed motion accompanied by the proposed additional documents or lists together with a showing of sufficient cause as to why they were not served by the date set pursuant to paragraph (a) of this section.

(2) Any failure to comply with an order under the provisions of paragraph (c) of this section may be considered by the Board of Patent Interferences as basis for applying appropriate restrictions against the party failing to comply, for holding certain facts to have been established, and in an appropriate case for awarding priority against him, or for taking such other action as may be deemed appropriate.

(e) The parties may by agreement among themselves modify any of the foregoing requirements consistent with the schedule of times for taking testimony and filing the record. In the absence of such agreement, discovery will not be permitted prior to the period set for the preparation for testimony.

[36 FR 8733, May 12, 1971, and 43 FR 28479, June 30, 1978]

§ 1.288 Use of discovery.

(a) If a party intends to rely upon an admission or upon an answer to an interrogatory, obtained by discovery, the admission or answer may be introduced into evidence by filing, before the closing of the time for taking the testimony of the party (before the time for taking the testimony in chief if such admission or answer is not in rebuttal), a copy of the admission and the request therefor and/or a copy of the interrogatory and its answer, together with a notice of reliance thereon.

(b) A party may not rely upon any other matter obtained by discovery unless it is introduced into evidence pursuant to §§ 1.271 to 1.286.

[46 FR 52363, Oct. 27, 1981]

PROTESTS AND PUBLIC USE PROCEEDINGS

§ 1.291 Protests by the public against pending applications.

(a) Protests by a member of the public against pending applications will be referred to the examiner having charge of the subject matter involved. A protest specifically identifying the application to which the protest is directed will be entered in the application file if (1) the protest is timely submitted; and (2) the protest is either served upon the applicant in accordance with § 1.248, or filed with the Office in duplicate in the event service is not possible.

(b) A protest submitted in accordance with the second sentence of paragraph (a) of this section will be considered by the Office if it includes (1) a listing of the patents, publications or other information relied upon; (2) a concise explanation of the relevance of each listed item; (3) a copy of each listed patent or publication or other item of information in written form or at least the pertinent portions thereof; and (4) an English language translation of all the necessary and pertinent parts of any non-English language patent, publication, or other item of information in written form relied upon.

(c) An acknowledgment of the entry of a protest under paragraph (a) of this section in a reissue application file will be sent to the member of the public filing the protest. A member of the public filing a protest under paragraph (a) of this section in an application for an original patent will not receive any communications from the Office relating to the protest, other than the return of a self-addressed postcard which the member of the public may include with the protest in order to receive an acknowledgment by the Office that the protest has been received. The Office will communicate with the applicant regarding any protest entered in the application file and may require the applicant to supply information pursuant to paragraph (a) of § 1.56, including responses to specific questions raised by the protest, in order for the Office to decide any issues raised by the protest. The active participation of the member of the public filing a protest pursuant to paragraph (a) of this section ends with the filing of the protest and no further submission on behalf of the protestor will be

acknowledged or considered unless such submission raises new issues which could not have been earlier presented, and thereby constitutes a new protest.

[47 FR 21752, May 19, 1982]

§ 1.292 Public use proceedings.

(a) When a petition for the institution of public use proceedings, supported by affidavits or declarations and the fee set forth in § 1.17(j) is filed by one having information of the pendency of an application and is found, on reference to the primary examiner, to make a prima facie showing that the invention involved in an interference or claimed in an application believed to be on file had been in public use or on sale one year before the filing of the application, or before the date alleged by an interfering party in his or her preliminary statement or the date of invention established by such party, a hearing may be had before the Commissioner to determine whether a public use proceeding should be instituted. If instituted, times may be set for taking testimony, which shall be taken as provided by §§ 1.271 to 1.286. The petitioner will be heard in the proceedings but after decision therein will not be heard further in the prosecution of the application for patent.

(b) The petition and accompanying papers should either: (1) Reflect that a copy of the same has been served upon the applicant or upon his attorney or agent of record; or (2) be filed with the Office in duplicate in the event service is not possible. The petition and accompanying papers, or a notice that such a petition has been filed, shall be entered in the application file.

[24 FR 10332; Dec. 22, 1959, 34 FR 18858, Nov. 26, 1969; 42 FR 5595, Jan. 28, 1977; 47 FR 33086, July 30, 1982, effective Oct. 1, 1982]

§ 1.301 Appeal to U.S. Court of Appeals for the Federal Circuit.

Any applicant or any owner of a patent involved in a reexamination proceeding dissatisfied with the decision of the Board of Appeals, and any party to an interference dissatisfied with the decision of the Board of Patent Interferences, may appeal to the U.S. Court of Appeals for the Federal Circuit. The appellant must take the following steps in such an appeal: (a) In the Patent and Trademark Office give notice to the Commissioner and file the reasons of appeal (see §§ 1.302 and 1.304); (b) in the court, file a copy of the notice and reasons of appeal and pay the fee for appeal, as provided by the rules of the court. The certified list required by the rules of the Court will be transmitted to the Court by the Patent and Trademark Office.

[46 FR 29184, May 29, 1981; 47 FR 47380, Oct. 26, 1982; effective Oct. 26, 1982]

§ 1.302 Notice and reasons of appeal.

(a) When an appeal is taken to the U.S. Court of Appeals for the Federal Circuit, the appellant shall give notice thereof to the Commissioner, and file in the Patent and Trademark Office within the time specified in § 1.304, his or her reasons of appeal specifically set forth in writing.

(b) In interferences and other contested cases, the notice and reasons must be served as provided in § 1.248.

(35 U.S.C. 142)

[47 FR 47380, Oct. 26, 1982; effective Oct. 26, 1982]

§ 1.303 Civil action under 35 U.S.C. 145, 146, 306.

(a) Any applicant or any owner of a patent involved in a reexamination proceeding dissatisfied with the decision of the Board of Appeals, and any party dissatisfied with the decision of the Board of Patent Interferences, may, instead of appealing to the U.S. Court of Appeals for the Federal Circuit (§ 1.301), have remedy by civil action under 35 U.S.C. 145 or 146, as appropriate. Such civil action must be commenced within the time specified in § 1.304.

(b) If an applicant in an ex parte case or an owner of a patent involved in a reexamination proceeding has taken an appeal to the U.S. Court of Appeals for the Federal Circuit, he or she thereby waives his or her right to proceed under 35 U.S.C. 145.

(c) If any adverse party to an appeal taken to the U.S. Court of Appeals for the Federal Circuit by a defeated party in an interference proceeding files notice with the Commissioner within twenty days after the filing of the defeated party's notice of appeal to the court (§ 1.302), that he or she elects to have all further proceedings conducted as provided in 35 U.S.C. 146, certified copies of such notices will be transmitted to the U.S. Court of Appeals for the Federal Circuit for such action as may be necessary. The notice of election must be served as provided in § 1.248.

[46 FR 29184, May 29, 1981; 47 FR 47380, Oct. 26, 1982; effective Oct. 26, 1982]

§ 1.304 Time for appeal or civil action.

(a) The time for filing the notice and reasons of appeal to the U.S. Court of Appeals for the Federal Circuit (§ 1.302) or for commencing a civil action (§ 1.303) is sixty days from the date of the decision of the Board of Appeals or the Board of Patent Interferences. If a request for rehearing or reconsideration, or modification of the decision, is filed within the time provided pursuant to § 1.197(b) or § 1.256(b), the time for filing an appeal or commencing a civil action shall expire at the end of the sixty-day period or thirty days after action on the request, whichev-

er is later. The time periods set forth herein are subject to the provisions of § 1.136.

(b) The times specified herein are calendar days. If the last day of the time specified for appeal or commencing a civil action falls on a Saturday, Sunday or legal holiday, the time is extended to the next day which is neither a Saturday, Sunday nor a holiday.

(c) If a defeated party to an interference has taken an appeal to the U.S. Court of Appeals for the Federal Circuit and an adverse party has filed notice under 35 U.S.C. 141 that he or she elects to have all further proceedings conducted under 35 U.S.C. 146 (§ 1.303(c)), the time for filing a civil action thereafter is specified in 35 U.S.C. 141.

[41 FR 758, Jan. 5, 1976; 47 FR 33086, July 30, 1982, revised paragraph (a) effective Oct. 1, 1982; and 47 FR 47380, Oct. 26, 1982 revised paragraph (c) effective Oct. 26, 1982]

ALLOWANCE AND ISSUE OF PATENT

§ 1.311 Notice of allowance.

(a) If, on examination, it shall appear that the applicant is entitled to a patent under the law, a notice of allowance will be sent to applicant at the correspondence address indicated in § 1.33, calling for the payment of a specified sum constituting the issue fee (§ 1.18), which shall be paid within 3 months from the date of the mailing of the notice of allowance.

(b) An authorization to charge the issue fee (§ 1.18) to a deposit account may be filed in an individual application, either before or after mailing of the notice of allowance. Where an authorization to charge the issue fee to a deposit account has been filed before the mailing of the notice of allowance, the issue fee will be automatically charged to the deposit account at the time of mailing the notice of allowance.

[30 FR 12844, Oct. 8, 1965; 47 FR 33086, July 30, 1982; effective Oct. 1, 1982]

§ 1.312 Amendments after allowance.

(a) No amendment may be made as a matter of right in an application after the mailing of the notice of allowance. Any amendment pursuant to this paragraph filed before the payment of the issue fee may be entered on the recommendation of the primary examiner, approved by the Commissioner, without withdrawing the case from issue.

(b) Any amendment pursuant to paragraph (a) of this section filed after the date the issue fee is paid must be accompanied by a petition including the fee set forth in § 1.17(i) and a showing of good and sufficient reasons why the amendment is necessary and was not earlier presented.

[34 FR 6844, Apr. 24, 1969; 47 FR 33086, July 30, 1982; effective Oct. 1, 1982]

§ 1.313 Withdrawal from issue.

(a) Applications may be withdrawn from issue for further action at the initiative of the Office or upon petition by the applicant. Any such petition by the applicant must include a showing of good and sufficient reasons why withdrawal of the application is necessary and, if the reason for the withdrawal is not the fault of the Office, must be accompanied by the fee set forth in § 1.17(i). If the application is withdrawn from issue, a new notice of allowance will be sent if the application is again allowed. Any amendment accompanying a petition to withdraw an application from issue must comply with the requirements of § 1.312.

(b) When the issue fee has been paid, and the patent to be issued has received its issue date and patent number, the application will not be withdrawn from issue for any reason except (1) mistake on the part of the Office, (2) a violation of § 1.56 or illegality in the application, (3) unpatentability of one or more claims, or (4) for interference.

[30 FR 12844, Oct. 8, 1965, as amended at 34 FR 18858, Nov. 26, 1969; 47 FR 33086, July 30, 1982; effective Oct. 1, 1982]

§ 1.314 Issuance of patent.

If payment of the issue fee is timely made, the patent will issue in regular course unless (a) the application is withdrawn from issue (§ 1.313) or (b) issuance of the patent is deferred. Any petition by the applicant requesting deferral of the issuance of a patent must be accompanied by the fee set forth in § 1.17(i) and must include a showing of good and sufficient reasons why it is necessary to defer issuance of the patent.

[30 FR 12844, Oct. 8, 1965; 47 FR 33086, July 30, 1982; effective Oct. 1, 1982]

§ 1.315 Delivery of patent.

The patent will be delivered or mailed on the day of its date to the attorney or agent of record, if there be one; or if the attorney or agent so request, to the patentee or assignee of an interest therein; or, if there be no attorney or agent, to the patentee or to the assignee of the entire interest, if he so request.

(35 U.S.C. 151)

§ 1.316 Application abandoned for failure to pay issue fee.

(a) If the issue fee is not paid within 3 months from the date of the notice of allowance, the application will be regarded as abandoned. Such an abandoned application will not be considered as pending before the Patent and Trademark Office.

(b) The Commissioner may accept the payment of the issue fee later than three months after the mailing of the notice of allowance as though no abandonment had ever occurred if upon petition the delay

in payment is shown to have been unavoidable. The petition to accept the delayed payment must be promptly filed after the applicant is notified of, or otherwise becomes aware of, the abandonment, and must be accompanied by (1) the issue fee, unless it has been previously submitted, (2) the fee for delayed payment (§ 1.17(l)), and (3) a showing that the delay was unavoidable. Such showing must be a verified showing if made by a person not registered to practice before the Patent and Trademark Office.

(c) The Commissioner may, upon petition, accept the payment of the issue fee later than three months after the mailing of the notice of allowance as though no abandonment had ever occurred if the delay in payment was unintentional. The petition to accept the delayed payment must be filed within one year of the date on which the application became abandoned or be filed within three months of the date of the first decision on a petition under paragraph (b) of this section which was filed within one year of the date of abandonment of the application. The petition to accept the delayed payment must be accompanied by (1) the issue fee, unless it has been previously submitted, (2) the fee for unintentionally delayed payment (§ 1.17(m)), and (3) a statement that the delay was unintentional. Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. The Commissioner may require additional information where there is a question whether the abandonment was unintentional. The three-month period from the date of the first decision referred to in this paragraph may be extended under the provisions of § 1.136(a), but no further extensions under § 1.136(b) will be granted. Petitions to the Commissioner under § 1.183 to waive any time periods for requesting revival of an unintentionally abandoned application will not be considered, but will be returned to the applicant.

(d) Any petition pursuant to paragraph (b) of this section not filed within six months of the date of abandonment must be accompanied by a terminal disclaimer with fee under § 1.321 dedicating to the public a terminal part of the term of any patent granted thereon equivalent to the period of abandonment of the application.

[30 FR 12844, Oct. 8, 1965, as amended at 40 FR 44814, Sept. 30, 1975, 47 FR 33086, July 30, 1982; effective Oct. 1, 1982]

§ 1.317 Lapsed patents; delayed payment of balance of issue fee.

(a) If the issue fee was paid prior to October 1, 1982, any remaining balance of the issue fee is to be paid within three months from the date of notice thereof and, if not paid, the patent will lapse at the termination of the three month period.

(b) The Commissioner may accept the payment of the remaining balance of the issue fee later than three months after the mailing of the notice thereof as though no lapse had ever occurred if upon petition the delay in payment is shown to have been unavoidable. The petition to accept the delayed payment must be promptly filed after the applicant is notified of, or otherwise becomes aware of, the lapse, and must be accompanied by (1) the remaining balance of the issue fee, unless it has been previously submitted, (2) the fee for delayed payment (§ 1.17(l)), and (3) a showing that the delay was unavoidable. Such showing must be a verified showing if made by a person not registered to practice before the Patent and Trademark Office.

(c) The Commissioner may, upon petition, accept the payment of the remaining balance of the fee later than three months after the mailing of the notice thereof as though no lapse had ever occurred if the delay in payment was unintentional. The petition to accept the delayed payment must be filed within one year of the date on which the patent lapsed or be filed within three months of the date of the first decision on a petition under paragraph (b) of this section which was filed within one year of the date of lapse of the patent. The petition to accept the delayed payment must be accompanied by (1) the remaining balance of the issue fee, unless it has been previously submitted, (2) the fee for unintentionally delayed payment (§ 1.17(m)), and (3) a statement that the delay was unintentional. Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. The Commissioner may require additional information where there is a question whether the delay in payment was unintentional. The three-month period from the date of the first decision referred to in this paragraph may be extended under the provisions of § 1.136(a), but no further extensions under § 1.136(b) will be granted. Petitions to the Commissioner under § 1.183 to waive any time periods for requesting acceptance of an unintentionally delayed payment will not be considered, but will be returned to the applicant.

(d) Any petition pursuant to paragraph (b) of this section not filed within six months of the date of lapse must be accompanied by a terminal disclaimer with fee under § 1.321 dedicating to the public a terminal part of the term of the patent equivalent to the period of lapse of the patent.

[40 FR 44814, Sept. 30, 1975; 47 FR 33086, July 30, 1982; effective Oct. 1, 1982]

§ 1.318 Notification of national publication of a patent based on an international application.

The Office will notify the International Bureau when a patent is issued on an application filed under 35 U.S.C. 371, and

there has been no previous international publication.

(Pub. L. 94-131, 89 Stat. 685)

[43 FR 20465, May 11, 1978]

DISCLAIMER

§ 1.321 Statutory disclaimer.

(a) A disclaimer under 35 U.S.C. 253 must be accompanied by the fee set forth in § 1.20(d) and identify the patent and the claim or claims which are disclaimed, and be signed by the person making the disclaimer, who shall state therein the extent of his or her interest in the patent. A disclaimer which is not a disclaimer of a complete claim or claims may be refused recordation. A notice of the disclaimer is published in the *Official Gazette* and attached to the printed copies of the specification. In like manner any patentee or applicant may disclaim or dedicate to the public the entire term, or any terminal part of the term, of the patent granted or to be granted.

(b) A terminal disclaimer, when filed in an application to obviate a double patenting rejection, must be accompanied by the fee set forth in § 1.20(d) and include a provision that any patent granted on that application shall be enforceable only for and during such period that said patent is commonly owned with the application or patent which formed the basis for the rejection.

[36 FR 7312, Apr. 17, 1971; 47 FR 33086, July 30, 1982; effective Oct. 1, 1982]

CORRECTION OF ERRORS IN PATENT

§ 1.322 Certificate of correction of Office mistake.

(a) A certificate of correction under 35 U.S.C. 254 may be issued at the request of the patentee or his assignee. Such certificate will not be issued at the request or suggestion of anyone not owning an interest in the patent, nor on motion of the Office, without first notifying the patentee (including any assignee of record) and affording him an opportunity to be heard.

(b) If the nature of the mistake on the part of the Office is such that a certificate of correction is deemed inappropriate in form, the Commissioner may issue a corrected patent in lieu thereof as a more appropriate form for certificate of correction, without expense to the patentee.

(35 U.S.C. 254)

[24 FR 10332, Dec. 22, 1959, and 34 FR 5550, Mar. 22, 1969]

§ 1.323 Certificate of correction of applicant's mistake

Whenever a mistake of a clerical or typographical nature or of minor character which was not the fault of the Office, appears in a patent and a showing is made that such mistake occurred in good faith, the Commissioner may, upon payment of the required fee, issue a certificate of correction, if the correction does not involve such changes in the patent as would constitute new matter or would require reexamination.

[34 FR 5550, Mar. 22, 1969]

§ 1.324 Correction of inventorship in patent.

Whenever a patent is issued and it appears that the correct inventor or inventors were not named through error without deceptive intention on the part of the actual inventor or inventors, the Commissioner may, on petition of all the parties and the assignees and satisfactory proof of the facts and payment of the fee set forth in § 1.20(b), or on order of a court before which such matter is called in question, issue a certificate naming only the actual inventor or inventors.

[47 FR 33086, July 30, 1982; and 48 FR 2696 Jan. 20, 1983, effective Feb. 27, 1983]

§ 1.325 Other mistakes not corrected.

Mistakes other than those provided for in §§ 1.322, 1.323, 1.324, and not affording legal grounds for reissue or for reexamination, will not be corrected after the date of the patent.

[48 FR 2696, Jan. 20, 1983; effective Feb. 27, 1983]

ASSIGNMENTS AND RECORDING

§ 1.331 Recording of assignments.

(a) Assignments, including grants and conveyances, of patents, national applications, or international applications which designate the United States of America, will be recorded in the Patent and Trademark Office under 35 U.S.C. 261. Other instruments affecting title to a patent, a national application, or an international application which designates the United States of America, and licenses, even though the recording thereof may not serve as constructive notice under 35 U.S.C. 261, will be recorded as provided in this section or at the discretion of the Commissioner. Any instrument to be recorded, except those under Part 7 of this title, must be accompanied by the fee set forth in § 1.21(h).

(b) No instrument will be recorded which is not in the English language and which does not amount to an assignment, grant, mortgage, lien, incumbrance, or license, or which does not affect the title of the patent or invention to which it relates, and which does not identify the patent or application to which it relates, except as ordered by the Commissioner.

(c) An instrument relating to a patent should identify the patent by number and

date (the name of the inventor and title of the invention as stated in the patent should also be given); an instrument relating to a national application, or an international application which designates the United States of America should identify the application by serial number or international application number and date of filing (the name of the inventor and title of the invention as stated in the application should also be given), but if an assignment is executed concurrently with or subsequent to the execution of the application but before the application is filed or before its serial number or international application number and filing date are ascertained, it should adequately identify the application, as by its date of execution and name of the inventor and title of the invention; so that there can be no mistake as to the patent or application intended.

(35 U.S.C. 261; Pub. L. 94-131, 89 Stat. 685)

[24 FR 10332, Dec. 22, 1959, as amended at 43 FR 20465, May 11, 1978; 47 FR 33086, July 30, 1982; effective Oct. 1, 1982]

§ 1.332 Receipt and recording.

Assignments are recorded in regular order as promptly as possible, and then transmitted with the date and identification of the record stamped thereon to the persons entitled to them. The date of the record is the date of the receipt of the assignment at the Office in proper form and accompanied by the fee set forth in § 1.21(h).

(35 U.S.C. 261)

[24 FR 10332, Dec. 22, 1959, as amended at 34 FR 18858, Nov. 26, 1969; 47 FR 33086, July 30, 1982; effective Oct. 1, 1982]

§ 1.333 Conditional assignments.

Assignments which are made conditional on the performance of certain acts or events, as the payment of money or other condition subsequent, if recorded in the Office are regarded as absolute assignments for Office purposes until cancelled with the written consent of both parties or by the decree of a competent court. The Office has no means for determining whether such conditions have been fulfilled.

(35 U.S.C. 261)

§ 1.334 Issue of patent to assignee.

(a) In case of an assignment of the entire interest in the invention and application, or of the entire interest in the patent to be granted, the patent will normally issue to the assignee. If the assignee should hold an undivided part interest, the patent will normally issue jointly to the inventor and the assignee. If it is desired that the patent so issue, the assignment in either case must first have been recorded, and at a day not later than the date payment is made of the issue fee.

(b) At the time of payment of the issue fee, a statement must be furnished indicating whether or not an assignment has been filed with the Patent and Trademark Office. In the event an assignment has been filed, such statement must include the name and address of the assignee and indicate whether or not an acknowledgement of a recorded assignment has been received from the Patent and Trademark Office.

(c) If the assignment is recorded after the date of payment of the issue fee, the assignee may petition that the patent issue to the assignee as recorded. Any such petition must be accompanied by the fee set forth in § 1.17(i).

[34 FR 17772, Nov. 4, 1969; and 47 FR 33086, July 30, 1982; effective Oct. 1, 1982]

§ 1.335 Filing of notice of arbitration awards.

(a) Written notice of any award by an arbitrator pursuant to 35 U.S.C. 294 must be filed in the Patent and Trademark Office by the patentee, or the patentee's assignee or licensee. If the award involves more than one patent a separate notice must be filed for placement in the file of each patent. The notice must set forth the patent number, the names of the inventor and patent owner, and the names and addresses of the parties to the arbitration. The notice must also include a copy of the award.

(b) If an award by an arbitrator pursuant to 35 U.S.C. 294 is modified by a court, the party requesting the modification must file in the Patent and Trademark Office, a notice of the modification for placement in the file of each patent to which the modification applies. The notice must set forth the patent number, the names of the inventor and patent owner, and the names and addresses of the parties to the arbitration. The notice must also include a copy of the court's order modifying the award.

(c) Any award by an arbitrator pursuant to 35 U.S.C. 294 shall be unenforceable until any notices required by paragraph (a) or (b) of this section are filed in the Patent and Trademark Office. If any required notice is not filed by the party designated in paragraph (a) or (b) of this section, any party to the arbitration proceeding may file such a notice.

[48 FR 2696, Jan. 20, 1983; effective Feb. 27, 1983]

RECOGNITION OF ATTORNEYS AND AGENTS

AUTHORITY: Secs. 1.341 to 1.348 also issued under 35 U.S.C. 31, 32.

§ 1.341 Registration of attorneys and agents.

A register of attorneys and a register of agents are kept in the Patent and Trademark Office on which are entered the

names of all persons recognized as entitled to represent applicants before the Patent and Trademark Office in the preparation and prosecution of applications for patent. Registration in the Patent and Trademark Office under the provisions of the regulations in this part shall only entitle the persons registered to practice before the Patent and Trademark Office.

(a) *Attorneys at law.* Any attorney at law in good standing admitted to practice before any United States Court or the highest court of any State or Territory of the United States who fulfills the requirements and complies with the provisions of these rules may be admitted to practice before the Patent and Trademark Office and have his name entered on the register of attorneys.

(b) *Agents.* Any citizen of the United States not an attorney at law who fulfills the requirements and complies with the provisions of these rules may be admitted to practice before the Patent and Trademark Office and have his name entered on the register of agents.

NOTE: All persons registered prior to November 15, 1938, were registered as attorneys, whether they were attorneys at law or not, and such registrations have not been changed.

(c) *Requirements for registration.* No person will be admitted to practice and registered unless he shall apply to the Commissioner of Patents and Trademarks in writing on a prescribed form supplied by the Commissioner and furnish all requested information and material; and shall establish to the satisfaction of the Commissioner that he is of good moral character and of good repute and possessed of the legal and scientific and technical qualifications necessary to enable him to render applicants for patents valuable service, and is otherwise competent to advise and assist them in the presentation and prosecution of their applications before the Patent and Trademark Office. In order that the Commissioner may determine whether a person seeking to have his name placed upon either of the registers has the qualifications specified, satisfactory proof of good moral character and repute, and of sufficient basic training in scientific and technical matters must be submitted and an examination which is held from time to time must be taken and passed. Each application for admission to the examination for registration must be accompanied by the prescribed fee (see § 1.21). The taking of an examination may be waived in the case of any person who has actively served for four years in the examining corps of the Patent and Trademark Office.

(d) [Reserved]

(e) *Foreign patent attorneys and agents.* Any foreign patent attorney or agent not a resident of the United States who shall file proof to the satisfaction of the Commissioner that he is registered and in good standing before the patent office of the country in which he resides and practices, and is possessed of the qualifications stated in paragraph (c) of this section, may be registered on the register of agents as entitled to represent applicants located in such country before the United States Patent and Trademark Office in the presentation and prosecution of applications: *Provided,* That the patent office of such country allows substantially reciprocal privileges to those admitted to practice before the United States Patent and Trademark Office. Such registration shall continue only during the period that the conditions specified obtain.

(f) *Government employees.* Officers and employees of the United States who are disqualified by statute (18 U.S.C. 203, 205) from practicing as attorneys or agents in proceedings or other matters before Government departments or agencies, may not be registered, and if any registered attorney or agent becomes such an officer or employee, his name on the register shall be endorsed as inactive during the period of such employment, but officers or employees whose official duties require the preparation and prosecution of applications for patent may be registered (on compliance with the regulations in this part) or recognized to practice, to the extent necessary to carry out their official duties.

(g) *Former examiners.* No person who has served in the examining corps of the Patent and Trademark Office will be registered after termination of his services, nor, if registered before such service, be reinstated, unless he undertakes: (1) Not to prosecute or aid in any manner in the prosecution of any application pending in any examining group during his period of service therein; and (2) not to prepare or prosecute nor to assist in any manner in the preparation or prosecution of any application of another filed within 2 years after the date he left such group, and assigned to such group, without the specific authorization of the Commissioner. Associated and related classes in other groups may be required to be included in the undertaking or designated classes may be excluded. In case application for registration or reinstatement is made after resignation from the Office, the applicant will not be registered, or reinstated, if he has prepared or prosecuted, or assisted in the preparation or prosecution of any such application as indicated in this paragraph. (See further 18 U.S.C. 207.)

(h) *Oath and registration fee.* Before his or her name may be entered on the register of attorneys or on the register of agents, every applicant for registration must, after his or her application is approved, subscribe and swear to an oath or make a declaration prescribed by the Commissioner of Patents and Trademarks and pay the prescribed registration fee. (See § 1.21(a)(2).)

(i) *Committee on Enrollment.* The Commissioner may establish a Committee on

Enrollment to receive and act upon applications for registration to practice before the Patent and Trademark Office, to conduct and supervise the examinations provided for in paragraph (c) of this section, to maintain the registers and to perform such other duties in connection with enrollment and recognition of attorneys and agents as may be necessary; or such functions may be performed by designated officials of the Patent and Trademark Office. Any action of such committee or official may be reviewed by the Commissioner.

[24 FR 10332, Dec. 22, 1959, 30 FR 6391, May 7, 1965; 34 FR 18858, Nov. 26, 1969; 36 FR 12617, July 2, 1971; 47 FR 33086, July 30, 1982; effective Oct. 1, 1982]

NOTE: See § 2.12 for practice in trademark cases.

§ 1.342 Limited recognition.

Any person not registered and not entitled to be recognized under § 1.341 as an attorney or agent to represent applicants generally may, upon a showing of circumstances which render it necessary or justifiable, be recognized by the Commissioner to prosecute as attorney or agent a specified application or applications, but this limited recognition shall not extend further than the application or applications specified.

§ 1.343 Persons not registered or recognized.

Only persons who are registered or given limited recognition as provided in § 1.342 will be permitted to prosecute patent applications of others before the Patent and Trademark Office.

[36 FR 12617, July 2, 1971]

§ 1.344 Professional conduct.

Attorneys and agents appearing before the Patent and Trademark Office must conform to the standards of ethical and professional conduct set forth in the Code of Professional Responsibility of the American Bar Association as amended February 24, 1970, insofar as such code is not inconsistent with this part. A copy of the said code is available for inspection in the Office of the Solicitor, U.S. Patent and Trademark Office, Room 11C04, Building 3, Crystal Plaza, 2021 Jefferson Davis Highway, Arlington, VA. Copies of the code are available upon request to the American Bar Center, 1155 E. 60th Street, Chicago, IL 60637.

[36 FR 12617, July 2, 1971]

§ 1.345 Advertising.

(a) The use of advertising, circulars, letters, cards, and similar material to solicit patent business, directly or indirectly, is forbidden as unprofessional conduct, and any person engaging in such solicitation, or associated with or employed by others who so solicit, shall be refused recognition to practice before the Patent and Trademark Office or may be suspended, excluded or disbarred from further practice.

(b) The use of simple professional letterheads, calling cards, or office signs, simple announcements necessitated by opening an office, change of association, or change of address, distributed to clients and friends, and insertion of listings in common form (not display) in a classified telephone or city directory, and listings and professional cards with biographical data in standard professional directories shall not be considered a violation of this rule.

(c) No agent shall, in any material specified in paragraph (b) of this section or in papers filed in the Patent and Trademark Office, represent himself to be an attorney, solicitor or lawyer.

[23 FR 8622, Nov. 5, 1958]

§ 1.346 Signature and certificate of attorney.

Every paper filed by an attorney or agent representing an applicant or party to a proceeding in the Patent and Trademark Office must bear the signature of such attorney or agent, except papers which are required to be signed by the applicant or party in person (such as the application itself and affidavits or declarations required of applicants). The signature of an attorney or agent to a paper filed by him, or the filing or presentation of any paper by him, constitutes a certificate that the paper has been read; that its filing is authorized; that to the best of his knowledge, information, and belief, there is good ground to support it; including any allegations of improper conduct contained therein; and that it is not interposed for delay.

[42 FR 5595, Jan. 28, 1977]

§ 1.347 Removing names from registers.

Attorneys and agents, registered to practice before the Patent and Trademark Office, should notify the Office of any change of address for entry on the register, by letter separate from any notice of change of address filed in individual applications. The Office may address a letter to any person on the registers, at the address of which separate notice for the register was last received, for the purpose of ascertaining whether such person desires to remain on the register. The name of any person failing to reply and give the information requested within a time limit specified will be removed from the register, and the names so removed published in the *Official Gazette*. Any name so removed may be reinstated, either on the register of attorneys or the register of agents, as may be appropriate. Any request for reinstatement must be accompanied by the fee set forth in § 1.21(a)(3).

[36 FR 12618, July 2, 1971; 47 FR 33086, July 30, 1982; effective Oct. 1, 1982]

§ 1.348 Suspension or disbarment proceedings.

Except as otherwise provided, proceedings for suspension, disbarment, or exclusion from practice are before a Commissioner.

(a) *Investigating and prosecuting officer.* The duties of investigation, preparing charges, collecting and presenting testimony, and presenting a case for suspension, exclusion from practice or disbarment shall be performed by the Solicitor of the Patent and Trademark Office or, at his direction, by a designated law examiner or other person, and neither the Solicitor nor such law examiner or other person shall participate in any manner in the decision of the case. If, upon investigation of a complaint or other information concerning an attorney or agent, it shall appear to the Solicitor that grounds for suspension, exclusion from practice, or disbarment exist, he shall prepare and forward the necessary notice and statement.

(b) *Notice of proceedings.* Proceedings for suspension or disbarment shall be instituted by the Solicitor by mailing to, or otherwise serving on, the respondent a notice of such proceeding with a statement of the charges against him, at the same time forwarding a copy to the Commissioner. It shall be the duty of the respondent to answer the charges as specified in paragraph (c) of this section.

(c) *Answer.* The respondent's answer shall be filed in writing with the Commissioner within one month from the time the notice is served on the respondent, or within such extension of time as may be allowed by the Commissioner for good cause shown. The answer shall be under oath or declaration. Failure to answer within the time allowed will be taken as an admission of the charges. The respondent in his answer should specifically admit or deny every material allegation of fact in the statement of charges; every allegation not denied shall be deemed admitted, unless the respondent states that he has no knowledge thereof sufficient to form a belief, which statement shall be considered a denial. Any special matters of defense shall be stated affirmatively in the answer. False statements in the answer may be made the basis of supplemental charges.

(d) *Hearing.* (1) Unless the Commissioner finds the answer sufficient to dispose of the charges, he will set the case for hearing before him, notifying the respondent and the Solicitor of the place, day and time of commencement of the hearing. Evidence as to the matters in issue may be submitted at the hearing, the testimony of witnesses being presented orally, under oath and reported.

(2) The hearing may be advanced and continued by the Commissioner, as far as may be deemed convenient and proper.

(3) Depositions for use at the hearing in lieu of personal appearance of witnesses may be taken by either the Solicitor or the respondent on application to and with the written consent of the Commissioner within such times and under such conditions as the Commissioner may prescribe.

(e) *Hearing officer.* The Commissioner may, in his discretion, delegate the conduct of the hearing to a hearing or trial examiner who shall be the presiding officer and who shall make a recommended decision.

(f) *Administrative Procedure Act.* Proceedings shall be governed, in matters not specifically set forth herein, by the provisions of the Administrative Procedure Act, 60 Stat. 237; 5 U.S.C. 1001–1011, which may be applicable.

[24 FR 10332, Dec. 22, 1959, and 34 FR 18858, Nov. 26, 1969]

AMENDMENT OF RULES

§ 1.351 Amendments to rules will be published.

All amendments to the regulations in this part will be published in the *Official Gazette* and in the FEDERAL REGISTER.

§ 1.352 Publication of notice of proposed amendments.

(a) Whenever required by law, and in other cases whenever practicable, notice of proposed amendments to the regulations in this part will be published in the *Official Gazette* and in the FEDERAL REGISTER. If not published with the notice, copies of the text will be furnished to any person requesting the same. All comments, suggestions, and briefs received within a time specified in the notice will be considered before adoption of the proposed amendments which may be modified in the light thereof.

(b) Oral hearings may be held at the discretion of the Commissioner.

Subpart C—International Processing Provisions

AUTHORITY: Pub. L. 94-131, 89 Stat. 685.

SOURCE: 43 FR 20466, May 11, 1978, unless otherwise noted.

GENERAL INFORMATION

§ 1.401 Definitions of terms under the Patent Cooperation Treaty.

(a) The abbreviation "PCT" and the term "Treaty" mean the Patent Cooperation Treaty.

(b) "International Bureau" means the World Intellectual Property Organization located in Geneva, Switzerland.

(c) "Administrative Instructions" means that body of instructions for operating under the Patent Cooperation Treaty referred to in PCT Rule 89.

(d) "Request", when capitalized, means that element of the international application described in PCT Rules 3 and 4.

(e) "International application", as used in this subchapter is defined in § 1.9(b).

(f) "Priority date" for the purpose of computing time limits under the Patent Cooperation Treaty is defined in PCT Art. 2 (xi). Note also § 1.465.

(g) Other terms and expressions in this Subpart C not defined in this section are to be taken in the sense indicated in PCT Art. 2 and 35 U.S.C. 351.

§ 1.412 The United States Receiving Office.

(a) The United States Patent and Trademark Office is a Receiving Office only for applicants who are residents or nationals of the United States of America.

(b) The Patent and Trademark Office, when acting as a Receiving Office, will be identified by the full title "United States Receiving Office" or by the abbreviation "RO/US."

(c) The major functions of the Receiving Office include:

(1) According of international filing dates to international applications meeting the requirements of PCT Art. 11(1), and PCT Rule 20;

(2) Assuring that international applications meet the standards for format and content of PCT Art. 14(1), PCT Rule 9, 26, 29.1, 37, 38, 91, and portions of PCT Rules 3 through 11;

(3) Collecting and, when required, transmitting fees due for processing international applications (PCT Rule 14, 15, 16);

(4) Transmitting the record and search copies to the International Bureau and International Searching Authority, respectively (PCT Rules 22 and 23); and

(5) Determining compliance with applicable requirements of Part 5 of this chapter.

§ 1.413 The United States International Searching Authority.

(a) Pursuant to appointment by the Assembly, the United States Patent and Trademark Office will act as an International Searching Authority for international applications filed in the United States Receiving Office and in other Receiving Offices as may be agreed upon by the Commissioner, in accordance with agreement between the Patent and Trademark Office and the International Bureau (PCT Art. 16(3)(b)).

(b) The Patent and Trademark Office, when acting as an International Searching Authority, will be identified by the full title "United States International Searching Authority" or by the abbreviation "ISA/US."

(c) The major functions of the International Searching Authority include:

(1) Approving or establishing the title and abstract;

(2) Considering the matter of unity of invention;

(3) Conducting international and international-type searches and preparing international and international-type search reports (PCT Art. 15, 17 and 18, and PCT Rules 25, 33 to 45 and 47); and

(4) Transmitting the international search report to the applicant and the International Bureau.

§ 1.414 The United States Designated Office.

(a) The United States Patent and Trademark Office will act as a Designated Office for international applications in which the United States of America has been designated as a State in which patent protection is desired.

(b) The Patent and Trademark Office, when acting as a Designated Office during international processing will be identified by the full title "United States Designated Office" or by the abbreviation "DO/US."

(c) The major functions of the United States Designated Office in respect to international applicat ons in which the United States of America has been designated, include:

(1) Receiving various notifications throughout the international stage;

(2) Accepting for regular national patentability examination international applications which satisfy the requirements of 35 U.S.C. 371; and

(3) Conducting reviews under PCT Article 25 for those international applications declared withdrawn.

§ 1.415 The International Bureau.

(a) The International Bureau is the World Intellectual Property Organization located at Geneva, Switzerland. It is the international intergovernmental organization which acts as the coordinating body under the Treaty and the Regulations (PCT Art. 2 (xix) and 35 U.S.C. 351 (h)).

(b) The major functions of the International Bureau include:

(1) Publishing of international applications and the International Gazette;

(2) Transmitting copies of international applications to Designated Offices;

(3) Storing and maintaining record copies; and

(4) Transmitting information to authorities pertinent to the processing of specific international applications.

WHO MAY FILE AN INTERNATIONAL APPLICATION

§ 1.421 Applicant for international application.

(a) Only residents or nationals of the

United States of America may file international applications in the United States Receiving Office.

(b) Although the United States Receiving Office will accept international applications filed by any resident or national of the United States of America for international processing, an international application designating the United States of America will be accepted by the Patent and Trademark Office for the national stage only if filed by the inventor or as provided in §§ 1.422, 1.423 or 1.425.

(c) International applications which do not designate the United States of America may be filed by the assignee or owner.

(d) The attorney or agent of the applicant may sign the international application Request and file the international application for the applicant if the international application when filed is accompanied by a separate power of attorney to that attorney or agent from the applicant. The separate power of attorney from the applicant may be submitted after filing if sufficient cause is shown for not submitting it at the time of filing. Note that paragraph (b) of this section requires that the applicant be the inventor if the United States of America is designated.

(e) Any indication of different applicants for the purpose of different Designated Offices must be shown on the Request portion of the international application.

(f) Changes in the person, name, or address of the applicant of an international application shall be made in accordance with PCT Rule 18.5.

§ 1.422 When the inventor is dead.

In case of the death of the inventor, the legal representative (executor, administrator, etc.) of the deceased inventor may file an international application which designates the United States of America.

§ 1.423 When the inventor is insane or legally incapacitated.

In case an inventor is insane or otherwise legally incapacitated, the legal representative (guardian, conservator, etc.) of such inventor may file an international application which designates the United States of America.

§ 1.424 Joint inventors.

Joint inventors must jointly file an international application which designates the United States of America; the signature of either of them alone, or less than the entire number will be insufficient for an invention invented by them jointly, except as provided in § 1.425.

§ 1.425 Filing by other than inventor.

(a) If a joint inventor refuses to join in an international application which designates the United States of America or cannot be found or reached after diligent effort, the international application which designates the United States of America may be filed by the other inventor on behalf of himself or herself and the omitted inventor. Such an international application which designates the United States of America must be accompanied by proof of the pertinent facts and must state the last known address of the omitted inventor. The Patent and Trademark Office shall forward notice of the filing of the international application to the omitted inventor at said address.

(b) Whenever an inventor refuses to execute an international application which designates the United States of America, or cannot be found or reached after diligent effort, a person to whom the inventor has assigned or agreed in writing to assign the invention or who otherwise shows sufficient proprietary interest in the matter justifying such action may file the international application on behalf of and as agent for the inventor. Such an international application which designates the United States of America, must be accompanied by proof of the pertinent facts and a showing that such action is necessary to preserve the rights of the parties or to prevent irreparable damage, and must state the last known address of the inventor. The assignment, written agreement to assign or other evidence of proprietary interest, or a verified copy thereof, must be filed in the Patent and Trademark Office. The Office shall forward notice of the filing of the application to the inventor at the address stated in the application.

THE INTERNATIONAL APPLICATION

§ 1.431 International application requirements.

(a) An international application shall contain, as specified in the Treaty and the Regulations, a Request, a description, one or more claims, an abstract, and one or more drawings (where required). (PCT Art. 3(2) and Section 207 of the Administrative Instructions.)

(b) An international filing date will be accorded by the United States Receiving Office, at the time of receipt of the international application, provided that:

(1) The applicant is a United States resident or national (35 U.S.C. 361(a), PCT Art. 11(1)(i)).

(2) The international application is in the English language (35 U.S.C. 361(c), PCT Art. 11(1)(ii)).

(3) The international application contains at least the following elements (PCT Art. 11(1)(iii)):

(i) An indication that it is intended as an international application (PCT Rule 4.2);

(ii) The designation of at least one Contracting State of the International Patent Cooperation Union;

(iii) The name of the applicant, as prescribed (note § 1.422);

(iv) A part which on the face of it appears to be a description; and

(v) A part which on the face of it appears to be a claim.

(c) Payment of the basic portion of the international fee (PCT Rule 15.2) and the transmittal and search fees (§ 1.445) shall be made in full at the time the international application papers required by paragraph (b) of this section are deposited. Failure to make full payment on the same date as the deposit of the international application papers required by subparagraph (b) of this section will result in the international application being considered withdrawn (PCT Art. 14(3)(a)).

§ 1.432 Designation of States and payment of designation fees.

(a) The names of Designated States shall appear in the Request upon filing and must be indicated as set forth in Section 201 of the Administrative Instructions.

(b) The designation fees may be paid upon filing of the international application, but must be paid at the latest before the expiration of one year from the priority date (PCT Rule 15.4(b)). Failure to timely pay the designation fee for a particular Designated State will result in the withdrawal of that designation (PCT Art. 14(3)(b)). Failure to timely pay at least one designation fee will result in the withdrawal of the international application (PCT Art. 14(3)(a)).

§ 1.433 Physical requirements of international application.

(a) The international application and each of the documents that may be referred to in the check list of the Request (PCT Rule 3.3(a)(ii)) shall be filed in one copy only.

(b) All sheets of the international application must be on A4 size paper (21.0 × 29.7 cm.).

(c) Other physical requirements for international applications are set forth in PCT Rule 11 and Sections 201–207 of the Administrative Instructions.

§ 1.434 The request.

(a) The request shall be made on a standardized printed form (PCT Rules 3 and 4). Copies of such printed Request forms are available from the Patent and Trademark Office. Letters requesting such forms should be marked "Box PCT."

(b) The Check List portion of the Request form should indicate each document accompanying the international application on filing.

(c) All information, for example, addresses, names of States and dates, shall be indicated in the Request as required by PCT Rule 4 and Administrative Instructions 110 and 201.

(d) International applications which designate the United States of America shall include:

(1) The name, address and signature of the inventor, except as provided by §§ 1.421(d), 1.422, 1.423 and 1.425;

(2) A reference to any copending national application or international application designating the United States of America, if the benefit of the filing date for the prior copending application is to be claimed.

§ 1.435 The description.

(a) Requirements as to the content and form of the description are set forth in PCT Rules 5, 9, 10 and 11 and Administrative Instruction 204, and shall be adhered to.

(b) In international applications designating the United States the description must contain upon filing an indication of the best mode contemplated by the inventor for carrying out the claimed invention.

§ 1.436 The claims.

The requirements as to the content and format of claims are set forth in PCT Art. 6 and PCT Rules 6, 9, 10 and 11 and shall be adhered to. The number of the claims shall be reasonable, considering the nature of the invention claimed.

§ 1.437 The drawings.

(a) Subject to paragraph (b) of this section, when drawings are necessary for the understanding of the invention, or are mentioned in the description, they must be part of an international application as originally filed in the United States Receiving Office in order to maintain the international filing date during the national stage (PCT Art. 7).

(b) Drawings missing from the application upon filing will be accepted if such drawings are received within 30 days of the date of first receipt of the incomplete papers. If the missing drawings are received within the 30-day period, the international filing date shall be the date on which such drawings are received. If such drawings are not timely received, all references to drawings in the international application shall be considered non-existent (PCT Art. 14(2), Administrative Instruction 310).

(c) The physical requirements for drawings are set forth in PCT Rule 11 and shall be adhered to.

§ 1.438 The abstract.

(a) Requirements as to the content and form of the abstract are set forth in PCT Rule 8, and shall be adhered to.

(b) Lack of an abstract upon filing of an international application will not affect the granting of a filing date. However, failure to furnish an abstract within one month from the date of the notification by the Receiving Office will result in the

international application being declared withdrawn.

FEES

§1.445 International application filing and processing fees.

(a) The following fees and charges are established by the Patent and Trademark Office under the authority of 35 U.S.C. 376:

(1)	A transmittal fee (see 35 U.S.C. 361(d) and PCT Rule 14)	$125.00
(2)	A search fee (see 35 U.S.C. 361(d) and PCT Rule 16) where:	
	(i) No corresponding prior United States national application with fee has been filed	$500.00
	(ii) Corresponding prior United States national application with fee has been filed . . .	250.00
(3)	A supplemental search fee when required (see PCT Art. 17(3)(a) and PCT Rule 40.2)	[1]$125.00
(4)	The national fee, that is, the amount set forth as the filing fee under § 1.16 (a) through (d) credited by an amount of $250 where an international search fee has been paid on the corresponding international application to the United States as an International Searching Authority. Where the amount of the credit is in excess of that required for the national fee, a request for a refund of the excess under § 1.446(b) may be filed at the time of paying the national fee. Only one such credit is permitted based on a single international search fee.	

[1]Per additional invention.

(5) A special fee when required (see 35 U.S.C. 372(c))—$10 per claim.

(b) The basic fee and designation fee portions of the international fee shall be as prescribed in PCT Rule 15.

[47 FR 33086, July 30, 1982; effective Oct. 1, 1982]

§ 1.446 Refund of international application filing and processing fees.

(a) Money paid for international application fees, where paid by actual mistake or in excess, such as a payment not required by law or Treaty and its Regulations, will be refunded.

(b) Refund of a portion of the search fee may be made to the extent set forth in § 1.445(a)(4) if requested at the time of paying the national fee.

(c) Refund of the supplemental search fees will be made if such refund is determined to be warranted by the Commissioner or the Commissioner's designee acting under PCT Rule 40.2(c).

(d) The international and search fees will be refunded if no international filing date is accorded (PCT Rules 15.6 and 16.2).

[47 FR 33086, July 30, 1982; effective Oct. 1, 1982]

PRIORITY

§ 1.451 The priority claim and priority document in an international application.

(a) The claim for priority must be made on the Request (PCT Rule 4.10) in a manner complying with Section 110 and 201 of the Administrative Instructions.

(b) Whenever the priority of an earlier United States national application is claimed in an international application, the applicant may request in a letter of transmittal accompanying the international application upon filing with the United States Receiving Office, that the Patent and Trademark Office prepare a certified copy of the national application for transmittal to the International Bureau (PCT Art. 8 and PCT Rule 17). The fee for preparing a certified copy is stated in § 1.19(a)(3) and (b)(1).

(c) If a certified copy of the priority document is not submitted together with the international application on filing, or, if the priority application was filed in the United States and a request and appropriate payment for preparation of such a certified copy do not accompany the international application on filing, the certified copy of the priority document must be transmitted directly by the applicant to the International Bureau within the time limit specified in PCT Rule 17.1(a).

[47 FR 33086, July 30, 1982 and 47 FR 40134, Sept. 10, 1982, effective Oct. 1, 1982]

REPRESENTATION

§ 1.455 Representation in international applications.

(a) Applicants of international applications may be represented by attorneys or agents licensed to practice before the Patent and Trademark Office or by a common representative (PCT Art. 49, Rules 4.8 and 90 and § 1.341).

(b) Appointment of an agent, attorney or common representative (PCT Rule 4.8) must be effected either in the Request

form, signed by all applicants, or in a separate power of attorney submitted either to the United States Receiving Office or to the International Bureau.

(c) Powers of attorney and revocations thereof should be submitted to the United States Receiving Office until the issuance of the international search report.

(d) The addressee for correspondence will be as indicated in Section 108 of the Administrative Instructions.

TRANSMITTAL OF RECORD COPY

§ 1.461 Procedures for transmittal of record copy to the International Bureau.

(a) Transmittal of the record copy of the international application to the International Bureau shall be made, at the option of the applicant, either by the United States Receiving Office or by the applicant. Subject to paragraph (b) of this section, any applicant who chooses to make such transmittal personally shall notify the United States Receiving Office to that effect in writing, by way of a notice filed together with the international application. Such notice shall also state whether the applicant wishes to collect the record copy at the United States Receiving Office or to have the record copy mailed directly to him. The record copy of an international application which was filed without being accompanied by such notice will be transmitted to the International Bureau by the United States Receiving Office (PTC Rule 22).

(b) An applicant may transmit the record copy to the International Bureau as provided in PCT Rule 22.2 only if the international application is filed with the United States Receiving Office before the expiration of 11 months from the priority date.

(c) No copy of an international application may be transmitted to the International Bureau, a foreign Designated Office, or other foreign authority by the United States Receiving Office or the applicant, unless the applicable requirements of Part 5 of this chapter have been satisfied.

TIMING

§ 1.465 Timing of application processing based on the priority date.

(a) For the purpose of computing time limits under the Treaty, the priority date shall be defined as in PCT Art. 2(xi).

(b) When a claimed priority date is cancelled under PCT Rule 4.10(d), or considered not to have been made under PCT Rule 4.10(b), the priority date for the purposes of computing time limits will be the date of the earliest valid remaining priority claim of the international application, or if none, the international filing date.

(c) When corrections under PCT Art. 11(2), Art. 14(2) or PCT Rule 20.2(a)(i) or (iii) are timely submitted and the date of receipt of such corrections falls later than one year from the claimed priority date or dates, the Receiving Office shall proceed under PCT Rule 4.10(d).

§ 1.468 Delays in meeting time limits.

Delays in meeting time limits during international processing of international applications may only be excused as provided in PCT Rule 82. For delays in meeting time limits in a national application, see § 1.137.

AMENDMENTS

§ 1.471 Corrections and amendments during international processing.

(a) All corrections submitted to the United States Receiving Office must be in the form of replacement sheets and be accompanied by a letter that draws attention to the differences between the replaced sheets and the replacement sheets, except that the deletion of lines of text, the correction of simple typographical errors, and one addition or change of not more than five words per sheet may be stated in a letter and the United States Receiving Office will make the deletion or transfer the correction to the international application, provided that such corrections do not adversely affect the clarity and direct reproducibility of the application (PCT Rule 26.4).

(b) Amendments of claims submitted to the International Bureau shall be as prescribed by PCT Rule 46.

§ 1.475 Changes in person, name, or address of applicants and inventors.

All requests for a change in person, name or address of applicants and inventor should be sent to the United States Receiving Office until the time of issuance of the international search report. Thereafter requests for such changes should be submitted to the International Bureau.

UNITY OF INVENTION

§ 1.481 Determination of unity of invention before the International Searching Authority.

(a) Before establishing the international search report, the International Searching Authority shall determine whether the international application complies with the requirement of unity of invention as set forth in PCT Rule 13 and as set forth in §§ 1.141 and 1.146 except as modified below in this section.

(b) If the International Searching Authority considers that the international application does not comply with the requirement of unity of invention, it shall inform the applicant accordingly and invite the payment of additional fees (note § 1.445 and PCT Art. 17(3)(a) and PCT

Rule 40). The applicant will be given a time period in accordance with PCT Rule 40.3 to pay the additional fees due.

(c) In the case of non-compliance with unity of invention and where no additional fees are paid, the international search will be performed on the invention first mentioned ("main invention") in the claims.

(d) Lack of unity of invention may be directly evident before considering the claims in relation to any prior art, or after taking the prior art into consideration, as where a document discovered during the search shows the invention claimed in a generic or linking claim lacks novelty or is clearly obvious, leaving two or more claims joined thereby without a common inventive concept. In such a case the International Searching Authority may raise the objection of lack of unity of invention.

§ 1.482 Protest to lack of unity of invention.

(a) If the applicant disagrees with the holding of lack of unity of invention by the International Searching Authority, additional fees may be paid under protest, accompanied by a request for refund and a statement setting forth reasons for disagreement or why the required additional fees are considered excessive, or both (PCT Rule 40.2(c)).

(b) Protest under paragraph (c) of this section will be examined by the Commissioner or the Commissioner's designee. In the event that the applicant's protest is determined to be justified, the additional fees or a portion thereof will be refunded.

(c) An applicant who desires that a copy of the protest and the decision thereon accompany the international search report when forwarded to the Designated Offices, may notify the International Searching Authority to that effect any time prior to the issuance of the international search report. Thereafter, such notification should be directed to the International Bureau (PCT Rule 40.2(c)).

Subpart D—Reexamination of Patents

SOURCE: 46 FR 29185, May 29, 1981, unless otherwise noted.

CITATION OF PRIOR ART

§ 1.501 Citation of prior art in patent files.

(a) At any time during the period of enforceability of a patent, any person may cite to the Patent and Trademark Office in writing prior art consisting of patents or printed publications which that person states to be pertinent and applicable to the patent and believes to have a bearing on the patentability of any claim of a particular patent. If the citation is made by the patent owner, the explanation of pertinency and applicability may include an explanation of how the claims differ from the prior art. Citations by the patent owner under § 1.555 and by a reexamination requester under either § 1.510 or § 1.535 will be entered in the patent file during a reexamination proceeding. The entry in the patent file of citations submitted after the date of an order to reexamine pursuant to § 1.525 by persons other than the patent owner, or a reexamination requester under either § 1.510 or § 1.535, will be delayed until the reexamination proceedings have been terminated.

(b) If the person making the citation wishes his or her identity to be excluded from the patent file and kept confidential, the citation papers must be submitted without any identification of the person making the submission.

(c) Citation of patents or printed publications by the public in patent files should either: (1) Reflect that a copy of the same has been mailed to the patent owner at the address as provided for in § 1.33(c); or in the event service is not possible (2) be filed with the Office in duplicate.

REQUEST FOR REEXAMINATION

§ 1.510 Request for reexamination.

(a) Any person may, at any time during the period of enforceability of a patent, file a request for reexamination by the Patent and Trademark Office of any claim of the patent on the basis of prior art patents or printed publications cited under § 1.501. The request must be accompanied by the fee for requesting reexamination set in § 1.20(c).

(b) Any request for reexamination must include the following parts:

(1) A statement pointing out each substantial new question of patentability based on prior patents and printed publications.

(2) An identification of every claim for which reexamination is requested, and a detailed explanation of the pertinency and manner of applying the cited prior art to every claim for which reexamination is requested. If appropriate the party requesting reexamination may also point out how claims distinguish over cited prior art.

(3) A copy of every patent or printed publication relied upon or referred to in paragraph (b) (1) and (2) of this section accompanied by an English language translation of all the necessary and pertinent parts of any non-English language patent or printed publication.

(4) The entire specification (including claims) and drawings of the patent for which reexamination is requested must be furnished in the form of cut-up copies of the original patent with only a single column of the printed patent securely mounted or reproduced in permanent form on one side of a separate paper. A copy of any disclaimer, certificate of correction,

or reexamination certificate issued in the patent must also be included.

(5) A certification that a copy of the request filed by a person other than the patent owner has been served in its entirety on the patent owner at the address as provided for in § 1.33(c). The name and address of the party served must be indicated. If service was not possible, a duplicate copy must be supplied to the Office.

(c) If the request does not include the fee for requesting reexamination or all of the parts required by paragraph (b) of this section, the person identified as requesting reexamination will be so notified and given an opportunity to complete the request within a specified time. If the fee for requesting reexamination has been paid but the defect in the request is not corrected within the specified time, the determination whether or not to institute reexamination will be made on the request as it then exists. If the fee for requesting reexamination has not been paid, no determination will be made and the request will be placed in the patent file as a citation if it complies with the requirements of § 1.501(a).

(d) The filing date of the request is: (1) The date on which the request including the entire fee for requesting reexamination is received in the Patent and Trademark Office; or (2) the date on which the last portion of the fee for requesting reexamination is received.

(e) A request filed by the patent owner, may include a proposed amendment in accordance with § 1.121(f).

(f) If a request is filed by an attorney or agent identifying another party on whose behalf the request is being filed, the attorney or agent must have a power of attorney from that party or be acting in a representative capacity pursuant to § 1.34(a).

[47 FR 33086, July 30, 1982; effective Oct. 1, 1982]

§ 1.515 Determination of the request for reexamination.

(a) Within three months following the filing date of a request for reexamination, an examiner will consider the request and determine whether or not a substantial new question of patentability affecting any claim of the patent is raised by the request and the prior art cited therein, with or without consideration of other patents or printed publications. The examiner's determination will be based on the claims in effect at the time of the determination and will become a part of the official file of the patent and will be given or mailed to the patent owner at the address as provided for in § 1.33(c) and to the person requesting reexamination.

(b) Where no substantial new question of patentability has been found, a refund of a portion of the fee for requesting reexamination will be made to the requester in accordance with § 1.26(c).

(c) The requester may seek review by a petition to the Commissioner under § 1.181 within one month of the mailing date of the examiner's determination refusing reexamination. Any such petition must comply with § 1.181(b). If no petition is timely filed or if the decision on petition affirms that no substantial new question of patentability has been raised, the determination shall be final and nonappealable.

§ 1.520 Reexamination at the initiative of the Commissioner.

The Commissioner, at any time during the period of enforceability of a patent, may determine whether or not a substantial new question of patentability is raised by patents or printed publications which have been discovered by the Commissioner or which have been brought to the Commissioner's attention even though no request for reexamination has been filed in accordance with § 1.510. The Commissioner may initiate reexamination without a request for reexamination pursuant to § 1.510. Normally requests from outside the Patent and Trademark Office that the Commissioner undertake reexamination on his own initiative will not be considered. Any determination to initiate reexamination under this section will become a part of the official file of the patent and will be given or mailed to the patent owner at the address as provided for in § 1.33(c).

REEXAMINATION

§ 1.525 Order to reexamine.

(a) If a substantial new question of patentability is found pursuant to § 1.515 or § 1.520, the determination will include an order for reexamination of the patent for resolution of the question. If the order for reexamination resulted from a petition pursuant to § 1.515(c), the reexamination will ordinarily be conducted by an examiner other than the examiner responsible for the initial determination under § 1.515(a).

(b) If the order for reexamination of the patent mailed to the patent owner at the address as provided for in § 1.33(c) is returned to the Office undelivered, the notice published in the *Official Gazette* under § 1.11(c) will be considered to be constructive notice and reexamination will proceed.

§ 1.530 Statement and amendment by patent owner.

(a) Except as provided in § 1.510(e), no statement or other response by the patent owner shall be filed prior to the determinations made in accordance with §§ 1.515 or 1.520. If a premature statement or other response is filed by the patent owner it will not be acknowledged or considered in making the determination.

(b) The order for reexamination will set a period of not less than two months from the date of the order within which the patent owner may file a statement on the new question of patentability including any proposed amendments the patent owner wishes to make.

(c) Any statement filed by the patent owner shall clearly point out why the subject matter as claimed is not anticipated or rendered obvious by the prior art patents or printed publications, either alone or in any reasonable combinations. Any statement filed must be served upon the reexamination requester in accordance with § 1.248.

(d) Any proposed amendments to the description and claims must be made in accordance with § 1.121(f). No amendment may enlarge the scope of the claims of the patent or introduce new matter. No amended or new claims may be proposed for entry in an expired patent. Moreover, no amended or new claims will be incorporated into the patent by certificate issued after the expiration of the patent.

(e) Although the Office actions will treat proposed amendments as though they have been entered, the proposed amendments will not be effective until the reexamination certificate is issued.

§ 1.535 Reply by requester.

A reply to the patent owner's statement under § 1.530 may be filed by the reexamination requester within two months from the date of service of the patent owner's statement. Any reply by the requester must be served upon the patent owner in accordance with § 1.248. If the patent owner does not file a statement under § 1.530, no reply or other submission from the reexamination requester will be considered.

§ 1.540 Consideration of responses.

The failure to timely file or serve the documents set forth in § 1.530 or in § 1.535 may result in their being refused consideration. No submissions other than the statement pursuant to § 1.530 and the reply by the requester pursuant to § 1.535 will be considered prior to examination.

§ 1.550 Conduct of reexamination proceedings.

(a) All reexamination proceedings, including any appeals to the Board of Appeals, will be conducted with special dispatch within the Office. After issuance of the reexamination order and expiration of the time for submitting any responses thereto, the examination will be conducted in accordance with §§ 1.104–1.119 and will result in the issuance of a reexamination certificate under § 1.570.

(b) The patent owner will be given at least 30 days to respond to any Office action. Such response may include further statements in response to any rejections and/or proposed amendments or new claims to place the patent in a condition where all the claims, if amended as proposed, would be patentable.

(c) The time for reply set in paragraph (b) of this section will be extended only for sufficient cause, and for a reasonable time specified. Any request for such extension must be filed on or before the day on which action by the patent owner is due, but in no case will the mere filing of the request effect any extension.

(d) If the patent owner fails to file a timely and appropriate response to any Office action, the reexamination proceeding will be terminated and the Commissioner will proceed to issue a certificate under § 1.570 in accordance with the last action of the Office.

(e) The reexamination requester will be sent copies of Office actions issued during the reexamination proceeding. Any document filed by the patent owner must be served on the requester in the manner provided in § 1.248. The document must reflect service or the document may be refused consideration by the Office. The active participation of the reexamination requester ends with the reply pursuant to § 1.535, and no further submissions on behalf of the reexamination requester will be acknowledged or considered. Further, no submissions on behalf of any third parties will be acknowledged or considered unless such submissions are (1) in accordance with § 1.510 or (2) entered in the patent file prior to the date of the order to reexamine pursuant to § 1.525. Submissions by third parties, filed after the date of the order to reexamine pursuant to § 1.525, must meet the requirements of and will be treated in accordance with § 1.501(a).

§ 1.552 Scope of reexamination in reexamination proceedings.

(a) Patent claims will be reexamined on the basis of patents or printed publications.

(b) Amended or new claims presented during a reexamination proceeding must not enlarge the scope of the claims of the patent and will be examined on the basis of patents or printed publications and also for compliance with the requirements of 35 U.S.C. 112 and the new matter prohibition of 35 U.S.C. 132.

(c) Questions other than those indicated in paragraphs (a) and (b) of this section will not be resolved in a reexamination proceeding. If such questions are discovered during a reexamination proceeding, the existence of such questions will be noted by the examiner in an Office action, in which case the patent owner may desire to consider the advisability of filing a reissue application to have such questions considered and resolved.

§1.555 Duty of disclosure in reexamination proceedings.

(a) A duty of candor and good faith toward the Patent and Trademark Office

rests on the patent owner, on each attorney or agent who represents the patent owner, and on every other individual who is substantively involved on behalf of the patent owner in a reexamination proceeding. All such individuals who are aware, or become aware, of patents or printed publications material to the reexamination which have not been previously made of record in the patent file must bring such patents or printed publications to the attention of the Office. A prior art statement, preferably in accordance with § 1.98, should be filed within two months of the date of the order for reexamination, or as soon thereafter as possible in order to bring such patents or printed publications to the attention of the Office.

(b) Disclosures pursuant to this section may be made to the Office through an attorney or agent having responsibility on behalf of the patent owner for the reexamination proceeding or through a patent owner acting in his or her own behalf. Disclosure to such an attorney, agent or patent owner shall satisfy the duty of any other individual. Such an attorney, agent or patent owner has no duty to transmit information which is not material to the reexamination.

(c) The duties of candor, good faith, and disclosure required in paragraph (a) of this section have not been complied with if any fraud was practiced or attempted on the Office or there was any violation of the duty of disclosure through bad faith or gross negligence by, or on behalf of, the patent owner in the reexamination proceeding.

(d) The responsibility for compliance with this section rests upon the individuals identified in paragraph (a) of this section and no evaluation will be made in the reexamination proceeding by the Office as to compliance with this section. If questions of compliance with this section are discovered during a reexamination proceeding, they will be noted as unresolved questions in accordance with § 1.552(c).

[47 FR 21752, May 19, 1982]

§ 1.560 Interviews in reexamination proceedings.

(a) Interviews in reexamination proceedings pending before the Office between examiners and the owners of such patents or their attorneys or agents of record must be had in the Office at such times, within Office hours, as the respective examiners may designate. Interviews will not be permitted at any other time or place without the authority of the Commissioner. Interviews for the discussion of the patentability of claims in patents involved in reexamination proceedings will not be had prior to the first official action thereon. Interviews should be arranged for in advance. Requests that reexamination requesters participate in interviews with examiners will not be granted.

(b) In every instance of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the patent owner. An interview does not remove the necessity for response to Office actions as specified in § 1.111.

§ 1.565 Concurrent office proceedings.

(a) In any reexamination proceeding before the Office, the patent owner shall call the attention of the Office to any prior or concurrent proceedings in which the patent is or was involved such as interferences, reissue, reexaminations, or litigation and the results of such proceedings.

(b) If a patent in the process of reexamination is or becomes involved in interference proceedings or litigation, or a reissue application for the patent is filed or pending, the Commissioner shall determine whether or not to stay the reexamination, reissue or interference proceeding.

(c) If reexamination is ordered while a prior reexamination proceeding is pending, the reexamination proceedings will be consolidated and result in the issuance of a single certificate under § 1.570.

(d) If a reissue application and a reexamination proceeding on which an order pursuant to § 1.525 has been mailed are pending concurrently on a patent, a decision will normally be made to merge the two proceedings or to stay one of the two proceedings. Where merger of a reissue application and a reexamination proceeding is ordered, the merged examination will be conducted in accordance with §§ 1.171 through 1.179 and the patent owner will be required to place and maintain the same claims in the reissue application and the reexamination proceeding during the pendency of the merged proceeding. The examiner's actions and any responses by the patent owner in a merged proceeding will apply to both the reissue application and the reexamination proceeding and be physically entered into both files. Any reexamination proceeding merged with a reissue application shall be terminated by the grant of the reissued patent.

[46 FR 29185, May 29, 1981, and 47 FR 21753, May 19, 1982]

CERTIFICATE

§ 1.570 Issuance of reexamination certificate after reexamination proceedings.

(a) Upon the conclusion of reexamination proceedings, the Commissioner will issue a certificate in accordance with 35 U.S.C. 307 setting forth the results of the reexamination proceeding and the content of the patent following the reexamination proceeding.

(b) A certificate will be issued in each

patent in which a reexamination proceeding has been ordered under § 1.525. Any statutory disclaimer filed by the patent owner will be made part of the certificate.

(c) The certificate will be mailed on the day of its date to the patent owner at the address as provided for in § 1.33(c). A copy of the certificate will also be mailed to the requester of the reexamination proceeding.

(d) If a certificate has been issued which cancels all of the claims of the patent, no further Office proceedings will be conducted with regard to that patent or any reissue applications or reexamination requests relating thereto.

(e) If the reexamination proceeding is terminated by the grant of a reissued patent as provided in § 1.565(d) the reissued patent will constitute the reexamination certificate required by this section and 35 U.S.C. 307.

(f) A notice of the issuance of each certificate under this section will be published in the *Official Gazette* on its date of issuance.

[46 FR 29185, May 29, 1981, and 47 FR 21753, May 19, 1982]

PART 3—FORMS FOR PATENT CASES [REMOVED]

[47 FR 40134, Sept. 10, 1982; effective Oct. 1, 1982]

PART 5—SECRECY OF CERTAIN INVENTIONS AND LICENSES TO FILE APPLICATIONS IN FOREIGN COUNTRIES

SECRECY ORDERS

Sec.

5.1 Defense inspection of certain applications.
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GENERAL

5.21 Effect of modification, rescission or license.
5.22 Papers in English language.
5.23 Correspondence.

AUTHORITY: 35 U.S.C. 6, 181–187, 188.

SOURCE: 24 FR 10381, Dec. 22, 1959, unless otherwise noted.

SECRECY ORDERS

§ 5.1 Defense inspection of certain applications.

(a) The provisions of this part shall apply to both national and international applications filed in the Patent and Trademark Office and, with respect to inventions made in the United States, to applications filed in any foreign country or any international authority other than the United States Receiving Office. The (1) filing of a national or an international application in a foreign country or with an international authority other than the United States Receiving Office, or (2) transmittal of an international application to a foreign agency or an international authority other than the United States Receiving Office is considered to be a foreign filing within the meaning of Chapter 17 of Title 35, United States Code.

(b) In accordance with the provisions of 35 U.S.C. 181, patent applications containing subject matter the disclosure of which might be detrimental to the national security are made available for inspection by defense agencies as specified in said section. Only applications obviously relating to national security, and applications within fields indicated to the Patent and Trademark Office by the defense agencies as so related, are made available. The inspection will be made only by responsible representatives authorized by the agency to review applications. Such representatives are required to sign a dated acknowledgement of access accepting the condition that information obtained from the inspection will be used for no purpose other than the administration of 35 U.S.C. 181–188. Copies of applications may be made available to such representatives for inspection outside the Patent and Trademark Office under conditions assuring that the confidentiality of the applications will be maintained, including the conditions that: (1) All copies will be returned to the Patent and Trademark Office promptly if no secrecy order is imposed, or upon rescission of such order if one is imposed, and (2) no additional copies will be made by the defense agencies. A record of the removal and return of copies made available for defense inspection will be maintained by the Patent and Trademark Office. Applications relating to atomic energy are made available to the Department of Energy as specified in § 1.14 of this chapter.

(Pub. L. 94-131, 89 Stat. 685)

[43 FR 20470, May 11, 1978]

§ 5.2 Secrecy order.

(a) When notified by the chief officer of a defense agency that publication or disclosure of the invention by the granting of a patent would be detrimental to the national security, an order that the invention be kept secret will be issued by the Commissioner of Patents and Trademarks.

(b) The secrecy order is directed to the applicant, his successors, any and all assignees, and their legal representatives; hereinafter designated as principals.

(c) A copy of the secrecy order will be forwarded to each principal of record in the application and will be accompanied by a receipt, identifying the particular principal, to be signed and returned.

(d) The secrecy order is directed to the subject matter of the application. Where any other application in which a secrecy order has not been issued discloses a significant part of the subject matter of the application under secrecy order, the other application and the common subject matter should be called to the attention of the Patent and Trademark Office. Such a notice may include any material such as would be urged in a petition to rescind secrecy orders on either of the applications.

§ 5.3 Prosecution of application under secrecy orders; withholding patent.

Unless specifically ordered otherwise, action on the application by the Office and prosecution by the applicant will proceed during the time an application is under secrecy order to the point indicated in this section:

(a) National applications under secrecy order which come to a final rejection must be appealed or otherwise prosecuted to avoid abandonment. Appeals in such cases must be completed by the applicant but unless otherwise specifically ordered by the Commissioner will not be set for hearing until the secrecy order is removed.

(b) An interference will not be declared involving national applications under secrecy order. However, if an applicant whose application under secrecy order copies claims from an issued patent, a notice of that fact will be placed in the file wrapper of the patent. (See § 1.205(c).

(c) When the national application is found to be in condition for allowance except for the secrecy order the applicant and the agency which caused the secrecy order to be issued will be notified. This notice (which is not a notice of allowance under § 1.311 of this chapter) does not require response by the applicant and places the national application in a condition of suspension until the secrecy order is removed. When the secrecy order is removed the Patent and Trademark Office will issue a notice of allowance under § 1.311 of this chapter, or take such other action as may then be warranted.

(d) International applications under secrecy order will not be mailed, delivered or otherwise transmitted to the international authorities or the applicant. International applications under secrecy order will be processed up to the point where, if it were not for the secrecy order, record and search copies would be transmitted to the international authorities or the applicant.

(Pub. L. 94-131, 89 Stat. 685)

[43 FR 20470, May 11, 1978, and 43 FR 28479, June 30, 1978]

§ 5.4 Petition for rescission of secrecy order.

(a) A petition for rescission or removal of a secrecy order may be filed by, or on behalf of, any principal affected thereby. Such petition may be in letter form, and it must be in duplicate. The petition must be accompanied by one copy of the application or an order for the same, unless a showing is made that such a copy has already been furnished to the department or agency which caused the secrecy order to be issued.

(b) The petition must recite any and all facts that purport to render the order ineffectual or futile if this is the basis of the petition. When prior publications or patents are alleged the petition must give complete data as to such publications or patents and should be accompanied by copies thereof.

(c) The petition must identify any contract between the Government and any of the principals, under which the subject matter of the application or any significant part thereof was developed, or to which the subject matter is otherwise related. If there is no such contract, the petition must so state.

(d) Unless based upon facts of public record, the petition must be verified.

§ 5.5 Permit to disclose or modification of secrecy order.

(a) Consent to disclosure, or to the filing of an application abroad, as provided in 35 U.S.C. 182, shall be made by a "permit" or "modification" of the secrecy order.

(b) Petitions for a permit or modification must fully recite the reason or purpose for the proposed disclosure. Where any proposed disclosee is known to be cleared by a defense agency to receive classified information, adequate explanation of such clearance should be made in the petition including the name of the agency or department granting the clearance and the date and degree thereof. The petition must be filed in duplicate and be accompanied by one copy of the application or an order for the same, unless a showing is made that such a copy has already been furnished to the department or agency which caused the secrecy order to be issued.

(c) In a petition for modification of a secrecy order to permit filing abroad, all countries in which it is proposed to file must be made known, as well as all attorneys, agents and others to whom the material will be consigned prior to being lodged in the foreign patent office. The petition should include a statement vouching for the loyalty and integrity of the proposed disclosees and where their clearance status in this or the foreign country is known all details should be given.

(d) Consent to disclosure of subject matter from one application under secrecy order may be deemed to be consent to the disclosure of common subject matter in other applications under secrecy order so long as not taken out of context in a manner disclosing material beyond the modification granted in the first application.

(e) The permit or modification may contain conditions and limitations.

§ 5.6 General and group permits.

(a) Organizations requiring consent for disclosure of applications under secrecy order to persons or organizations in connection with repeated routine operation may petition for such consent in the form of a general permit. To be successful such petitions must ordinarily recite the security clearance status of the disclosees as sufficient for the highest classification of materials that may be involved.

(b) Where identical disclosees and circumstances are involved, and consent is desired for the disclosure of each of a specific list of applications, the petitions may be joined.

§ 5.7 Compensation.

Any request for compensation as provided in 35 U.S.C. 183 must not be made to the Patent and Trademark Office but should be made directly to the department or agency which caused the secrecy order to be issued. Upon written request persons having a right to such information will be informed as to the department or agency which caused the secrecy order to be issued.

§ 5.8 Appeal to Secretary.

Appeal to the Secretary of Commerce, as provided by 35 U.S.C. 181, from a secrecy order cannot be taken until after a petition for rescission of the secrecy order has been made and denied. Appeal must be taken within 60 days from the date of the denial, and the party appealing, as well as the department or agency which caused the order to be issued will be notified of the time and place of hearing. The appeal will be heard and decided by the Secretary or such officer or officers as he may designate.

LICENSES FOR FOREIGN FILING

§ 5.11 License for filing application in foreign country or for transmitting international application.

(a) When no secrecy order has been issued under § 5.2, a license from the Commissioner of Patents and Trademarks under 35 U.S.C. 184 is required before filing any application for patent or for the registration of a utility model, industrial design, or model, in a foreign country, or transmitting an international application to any foreign patent agency or any international agency other than the United States Receiving Office, or causing or authorizing such filing or transmittal, with respect to an invention made in the United States, if:

(1) The foreign application is to be filed or its filing caused or authorized before a national or international application for patent is filed in the United States, or

(2) The foreign application is to be filed, or its filing caused or authorized, or the transmittal of the international application is caused or authorized, prior to the expiration of six months from the filing of the application in the United States.

(b) When there is no secrecy order in effect, a license under 35 U.S.C. 184 is not required if:

(1) The invention was not made in the United States, or

(2) The foreign application is to be filed or the international application is to be transmitted, or its filing or transmittal caused or authorized, after the expiration of six months from the filing of the national application in the United States.

(c) When a secrecy order has been issued under § 5.2, an application cannot be filed in a foreign country, nor can an international application be transmitted to any agency other than the United States Receiving Office except in accordance with § 5.5.

(Pub. L. 94-131, 89 Stat. 685)

[43 FR 20471, May 11, 1978]

§ 5.12 Petition for license.

(a) Filing of an application for patent for inventions made in the United States will be considered to include a petition for license under 35 U.S.C. 184 for the subject matter of the application. The filing receipt will indicate if a license is granted. If the initial automatic petition is not granted, a subsequent petition may be filed under paragraph (b) of this section.

(b) Petitions for license under 35 U.S.C. 184 should be presented in letter form and should include petitioner's address, and full instructions for delivery of the requested license when it is to be delivered to other than the petitioner.

[48 FR 2696, Jan. 20, 1983; effective Feb. 27, 1983]

§ 5.13 Petition for license; no corresponding application.

Where there is no corresponding national or international application, the petition for license must be accompanied by a legible copy of the material upon which license is desired. This copy will be retained as a measure of the license granted. For assistance in the identification of the subject matter of each license so issued, it is suggested that the petition or requesting letter be submitted in duplicate and provide a title and other description of the material. The duplicate copy of the petition will be returned with the license or other action on the petition. Where an international application is being filed in the United States Receiving Office, the petition may accompany the international application.

(Pub. L. 94-131, 89 Stat. 685)

[43 FR 20471, May 11, 1978]

§ 5.14 Petition for license; corresponding U.S. application.

(a) Where there is a corresponding United States application on file the petition for license must identify this application by serial number, filing date, inventor, and title, and a copy of the material upon which the license is desired is not required. The subject matter licensed will be measured by the disclosure of the United States application. Where the title is not descriptive, and the subject matter is clearly of no interest from a security standpoint, time may be saved by a short statement in the petition as to the nature of the invention.

(b) Two or more United States applications should not be referred to in the same petition for license unless they are to be combined in the foreign or international application, in which event the petition should so state and the identification of each United States application should be in separate paragraphs.

(c) Where the application to be filed or transmitted abroad contains matter not disclosed in the United States application or applications, including the case where the combining of two or more United States applications introduces subject matter not disclosed in any of them, a copy of the application as it is to be filed in the foreign country or international application which is to be transmitted to a foreign international or national agency as it is to be filed in the Receiving Office must be furnished with the petition. If, however, all new matter in the foreign or international application to be filed is readily identifiable, the new matter may be submitted in detail and the remainder by reference to the pertinent United States application or applications.

(Pub. L. 94-131, 89 Stat. 685)

[24 FR 10381, Dec. 22, 1959, and 43 FR 20471, May 11, 1978]

§ 5.15 Scope of license.

(a) A license to file an application in a foreign country or transmit an international application to any foreign or international agency other than the United States Receiving Office, when granted, includes authority to forward all duplicate and formal papers to the foreign country or international agencies and to make amendments and take any action in the prosecution of the foreign or international application, provided subject matter additional to that covered by the license is not involved. In those cases in which no license is required to file the foreign application or transmit the international application, no license is required to file papers in connection with the prosecution of the foreign or international application not involving the disclosure of additional subject matter. Any paper filed abroad or with an international agency following the filing of a foreign or international application which involves the disclosure of additional subject matter must be separately licensed in the same manner as a foreign or international application.

(b) Licenses separately granted in connection with two or more United States applications may be exercised by combining or dividing the disclosures, as desired, provided additional subject matter is not introduced.

(c) A license does not apply to acts done before the license was granted unless the petition specifically requests and describes the particular acts and the license is worded to apply to such acts.

(Pub. L. 94-131, 89 Stat. 685)

[24 FR 10381, Dec. 22, 1959, and 43 FR 20471, May 11, 1978]

§ 5.16 Effect of secrecy order.

Any license obtained under 35 U.S.C. 184 is ineffective if the subject matter is under a secrecy order, and a secrecy order prohibits the exercise of or any further action under the license unless separately specifically authorized by a modification of the secrecy order in accordance with § 5.5.

§ 5.17 Who may use license.

Licenses may be used by anyone interested in the foreign filing or international transmittal for or on behalf of the inventor or the inventor's assigns.

(Pub. L. 94-131, 89 Stat. 685)

[43 FR 20471, May 11, 1978]

§ 5.18 Arms, ammunition, and implements of war.

(a) The exportation of technical data relating to arms, ammunition, and implements of war generally is subject to the International Traffic in Arms Regulations of the Department of State (22 CFR Parts 121-128); the articles designated as arms, ammunition, and implements of war are

enumerated in the U.S. Munitions List, 22 CRF 121.01. However, if a patent applicant complies with regulations issued by the Commissioner of Patents and Trademarks under 35 U.S.C. 184, no separate approval from the Department of State is required unless the applicant seeks to export technical data exceeding that used to support a patent application in a foreign country. This exemption from Department of State regulations is applicable regardless of whether a license from the Commissioner is required by the provisions of §§ 5.11 and 5.15 (22 CFR 125.04(b), 125.20(b)).

(b) When a patent application containing subject matter on the Munitions List (22 CFR 121.01) is subject to a secrecy order under § 5.2 and a petition is made under § 5.5 for a modification of the secrecy order to permit filing abroad, a separate request to the Department of State for authority to export classified information is not required (22 CFR 125.05(d)).

[35 FR 6430, Apr. 22, 1970]

§ 5.19 Export of technical data.

(a) Under regulations (15 CFR 370.10(j)) established by the U.S. Department of Commerce, International Trade Administration, Office of Export Administration, a validated export license is not required in any case to file a patent application or part thereof in a foreign country if the foreign filing is in accordance with the regulations (37 CFR 5.11-5.23) of the Patent and Trademark Office.

(b) A validated export license is not required for data contained in a patent application prepared wholly from foreign-origin technical data where such application is being sent to the foreign inventor to be executed and returned to the United States for subsequent filing in the U.S. Patent and Trademark Office (15 CFR 379.3(c)).

(c) Inquiries concerning the export control regulations for the foreign filing of technical data other than patent applications should be made to the Office of Export Administration, International Trade Administration, Department of Commerce, Washington, D.C. 20230.

[45 FR 72654, Nov. 3, 1980]

GENERAL

§ 5.21 Effect of modification, rescission or license.

Any consent, rescission or license under the provisions of this part does not lessen the responsibilities of the principals in respect to any Government contract or the requirements of any other Government agency.

§ 5.22 Papers in English language.

All papers submitted in connection with petitions must be in the English language, or be accompanied by an English translation and a translator's certificate as to the true, faithful and exact character of the translation.

§ 5.23 Correspondence.

All correspondence in connection with this part, including petitions, should be addressed to "Commissioner of Patents and Trademarks (Attention Patent Security Division), Washington, D.C. 20231."

PART 7—REGISTER OF GOVERNMENT INTERESTS IN PATENTS

Sec.
7.1 Requirements.
7.2 Assignments.
7.3 Licenses.
7.4 Abbreviated copy.
7.5 Instruments already on record.
7.6 Access to register.
7.7 Secret register.

AUTHORITY: E.O. 9424, Feb. 18, 1944, 9 FR 1959; 3 CFR 1943–1948 Comp.

SOURCE: 24 FR 10383, Dec. 22, 1959.

§ 7.1 Requirements.

Executive Order 9424 (3 CFR 1943–1948 Comp.) requires the several departments and other executive agencies of the Government, including Government-owned or Government-controlled corporations, to forward promptly to the Commissioner of Patents and Trademarks for recording all licenses, assignments, or other interests of the Government in or under patents or applications for patents.

§ 7.2 Assignments.

The original of an assignment or other instrument which conveys to the Government only the title to a patent or to an application for patent shall be forwarded to the Commissioner of Patents and Trademarks. The instrument will be recorded, endorsed, and returned.

§ 7.3 Licenses.

A copy of any license or instrument other than an assignment which conveys to or gives the Government any interest in or under a patent or an application for patent shall be forwarded for recording. The copy will be retained by the Patent and Trademark Office but, when desired, the original will be endorsed and returned.

§ 7.4 Abbreviated copy.

If an instrument deals with matters in addition to rights and interests in patents or in applications for patents, or in inventions disclosed therein, a copy of only those portions of the instrument dealing with such rights and interests need be forwarded. In such case, a statement giving the general nature of the entire instrument, the parties involved, the date of the instrument, the place where it is usually

filed, and any docket or identifying number, must be attached to the copy.

§ 7.5 Instruments already on record.

Instruments which have been recorded prior to the adoption of §§ 7.1 to 7.7 and are on the general assignment records of the Patent and Trademark Office need not be forwarded again for recording.

§ 7.6 Access to register.

The register will not be open to public inspection. It will be available for examination and inspection by duly authorized representatives of the Government, subject to the provisions of § 7.7. Public examination will be restricted to those

§ 7.7 Secret register.

Any instrument to be recorded will be placed on a secret record or register at the request of the department or agency submitting the same. No information will be given concerning any instrument in such record or register, and no examination or inspection thereof or of the index thereto will be permitted, except on the written authority of the head of the department or agency which submitted the instrument and requested secrecy, and the approval of such authority by the Commissioner of Patents and Trademarks. No instrument or record other than the one specified may be examined, and the examination must take place in the presence of a designated official of the Patent and Trademark Office. When the department or agency which submitted an instrument no longer requires secrecy with respect to that instrument, it will be recorded or registered anew in the appropriate part of the register which is not secret.

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REISSUES

APRIL 19, 1983

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,209

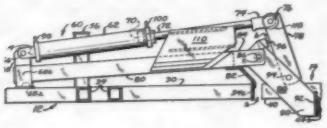
AGRICULTURAL IMPLEMENT WITH FOLDABLE TOOL SUPPORTING FRAME

Charles W. Anderson, 327 E. Prospect St., Kewanee, Ill. 61443

Original No. 4,023,623, dated May 17, 1977, Ser. No. 652,490, Jan. 26, 1976. Application for reissue May 14, 1979, Ser. No. 38,508

Int. Cl.³ A01B *73/00*

U.S. Cl. 172—311 **1 Claim**



21. An agricultural implement comprising a tool supporting main frame and at least one tool supporting wing frame, a hinge link rigidly connected to the wing frame and hingedly connected to the main frame to swing on a hinge axis, an operating link pivotally connected to the hinge link, a piston cylinder disposed over the main frame and containing an extendible and retractable piston, one of said piston and cylinder being pivotally connected to the main frame inboard of said hinge axis and the other pivotally connected to the operating link, the wing frame being swingable on said hinge axis between a storage position over the main frame and generally horizontal working position to one side of the main frame in response to force exerted on the operating link by retraction and extension of the piston within the cylinder, one of said links having an abutment positioned to be engaged by the other link when force is exerted on the operating link by the piston to swing the wing frame between near vertical and its generally horizontal working position, said abutment being out of engagement with the other link when the piston is in its fully extended position so that the wing frame is free to swing through a limited angle about the hinge axis when in its working position in order to follow field contour and slope, and guide means on the main frame which receive and confine the pivotal connection of the operating link to said other of the piston and cylinder so as to resist raising of said pivotal connection off said guide means when the wing frame is swung through substantially its full range of movement between said near vertical and storage position, wherein the operating link is pivotally connected to the hinge link intermediate the latter's rigid and hinged connections to the wing frame and main frame respectively, and wherein the abutment is fixed to the hinge link with the hinged connection of the hinge link to the main frame disposed between the abutment and the fixed connection of the hinge link to the wing frame.

Re. 31,210

APPARATUS AND METHOD FOR FEEDING AND COLLECTING CONTINUOUS WEB MATERIAL

James F. Lapp, Richmond, Va., and Thomas F. McGrath, Tinley Park, Ill., assignors to Acme Visible Records, Inc., Crozet, Va.

Original No. 4,256,248, dated Mar. 17, 1981, Ser. No. 90,585, Nov. 2, 1979. Application for reissue Dec. 11, 1981, Ser. No. 329,944

Int. Cl.³ B65H *19/42, 23/32, 19/18*

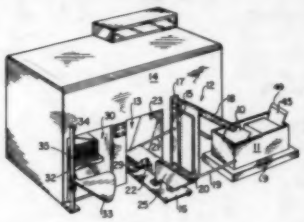
U.S. Cl. 226—119 **12 Claims**

7. An apparatus for continuously feeding a series of web portions to a high speed web processing machine having a web intake aperture located in a recessed area of said processing machine, comprising

(a) web portion alignment and splicing means exterior of said processing machine for aligning web portions in tandem relationship for splicing;

(b) turn bar means for changing the direction of web travel from a path determined by splicing to successive paths toward and within said intake recess of said processing machine and thereafter in a path through said intake aperture; and

(c) driving and tension control means for controllably driving said web from said alignment and splicing means to a position adjacent said intake aperture, which driving and tension control means, in turn, comprises



(i) a driven roll for contacting said web, said driven roll having a surface capable of engaging said web with sufficient force to substantially assist in pulling said web from said alignment and splicing means to a position adjacent said intake aperture with the remainder of the force required for web movement being supplied by an internal web moving means located within said processing machine; and

(ii) drive means for driving said driven roll.

Re. 31,211

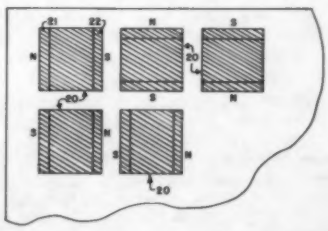
MAGNETICALLY CODED IDENTIFICATION CARD

Edwin N. Whitehead, 6208 Tally Ho La., Alexandria, Va. 22307

Original No. 4,253,017, dated Feb. 24, 1981, Ser. No. 911,588, May 31, 1978. Continuation-in-part of Ser. No. 601,778, Aug. 4, 1975, and Ser. No. 487,757, Jul. 11, 1974, which is a continuation-in-part of Ser. No. 431,803, Jan. 8, 1974, abandoned, which is a continuation-in-part of Ser. No. 223,649, Feb. 4, 1972, abandoned. Application for reissue Feb. 17, 1982, Ser. No. 349,444

Int. Cl.³ G06K *7/08;* **G11B** *5/38;* **B42D** *15/00*

U.S. Cl. 235—449 **12 Claims**



7. Apparatus for reading an identification card having a core capable of being permanently magnetized to provide multiplicity of bits of information, said bits being arranged in at least one row, which core has a spot for each bit of information with each spot being magnetized along its length to provide spaced opposing magnetic poles comprising:

reading means for reading said bits of information simultaneously,

said reading means having for a plurality of the bits to be read:

(a) magnetic means having first and second ends adjacent said opposing poles respectively so that magnetic flux passes through said magnetic means,

(b) flux responsive means, cooperating with said magnetic means, responsive to the direction that magnetic flux is passing through said magnetic means, and

(c) means for selectively applying magnetic flux to said magnetic means to effect predetermined magnetization of the portion of the core on which the bit of information is recorded.

Re. 31,212

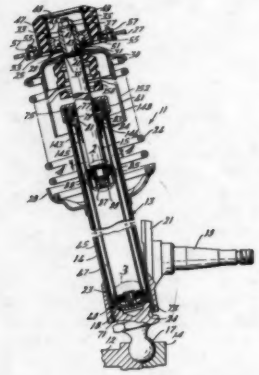
VEHICLE SUSPENSION DEVICE

Charles J. Smith, Fairview, Mich., assignor to Monroe Auto Equipment Company, Monroe, Mich.

Original No. 3,346,272, dated Oct. 10, 1967, Ser. No. 496,045, Oct. 14, 1965. Continuation of Ser. No. 735,809, Oct. 26, 1976, abandoned. Application for reissue Sep. 21, 1978, Ser. No. 944,544

Int. Cl.³ B60G *11/14*

U.S. Cl. 280—668 **38 Claims**



1. In an independent wheel suspension device for an automotive vehicle, said suspension device comprising a hydraulic tubular shock absorber having a pair of relatively movable telescopic parts, detachable means on one of said telescopic parts connectable to a body portion of said vehicle, a tube removably supporting the other of said telescopic parts, said tube being connectable to a wheel spindle and having a removable end portion whereby said shock absorber is removable and replaceable through the end of said tube having said removable end portion upon detaching said detachable means.

Re. 31,213

POLYOLEFIN COMPOSITION HAVING HIGH IMPACT RESISTANCE AND HIGH TEMPERATURE FLOW RESISTANCE

Armand E. Brachman, Emmaus, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Original No. 4,229,504, dated Oct. 21, 1980, Ser. No. 929,611, Jul. 31, 1978. Application for reissue Jan. 28, 1981, Ser. No. 229,050

Int. Cl.³ B32B *15/08*

U.S. Cl. 428—462 **14 Claims**

14. A metal-plastic laminate containing a core material [of the composition of matter of claim 1] *sandwiched between two metal sheets, the core material being characterized by a high level of impact resistance and high temperature flow resistance and being a resin blend of a polyolefin and an elastomer to which a filler is added consisting essentially of:*

(a) about 30 to 90 weight percent of a resin containing

(i) greater than 50 to less than 75 weight percent of at least one polyolefin selected from the group consisting of isotactic crystalline polypropylene, high density crystalline polyethylene, low density polyethylene and propylene-ethylene copolymer in which propylene is present in 85–95% by weight and which has a tensile yield elongation greater than 20%, and

(ii) greater than 25 to less than 50 weight percent of elastomer and

(b) about 10 to 70 weight percent of an inorganic filler.

Re. 31,214

COLLOIDAL SOL ANTIMONY PENTAOXIDE FLAMEPROOFING COMPOSITIONS

Henry G. Petrow, 32 Garfield St., Watertown, Mass. 02172, and Robert J. Allen, 130 Adams Ave., Saugus, Mass. 01906

Original No. 3,960,989, dated Jun. 1, 1976, Ser. No. 526,058, Nov. 21, 1974. Division of Ser. No. 212,375, Dec. 27, 1971, Pat. No. 3,860,523. Application for reissue Feb. 23, 1981, Ser. No. 236,748

Int. Cl.³ C08K *3/22*; C09K *3/28*

U.S. Cl. 524—411 **6 Claims**

1. A flame retardant comprising [a] *an aqueous* colloidal sol of Sb_2O_5 having colloidal particle size ranging from substantially 20 Angstroms to 1/10 micron and in which an effective amount of a halogen is added.

Re. 31,215

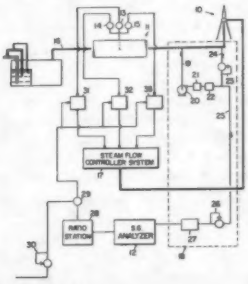
SMOKELESS GAS FLARE WITH SPECIFIC GRAVITY GAS ANALYZER FOR REDUCTION OF NOISE

John J. Stranahan, Peru, Ind., and John C. L. Hollier, Nederland, Tex., assignors to Texaco Inc., White Plains, N.Y.

Original No. 3,771,940, dated Nov. 13, 1973, Ser. No. 266,794, Jun. 27, 1972. Application for reissue Mar. 2, 1981, Ser. No. 239,293

Int. Cl.³ F23D *13/20*

U.S. Cl. 431—4 **11 Claims**



1. A method for smokelessly burning gas with less noise in a steam aspirating flare having means for controlling the amount of steam to the flare for controlling the amount of air drawn in for mixing with the gas for burning, comprising the steps of,

a. determining the specific gravity of the gas being burned *with a torque type specific gravity analyzer*, and

b. varying the amount of steam to the flare relative to the specific gravity of the gas to be burned *by means including a ratio station means receiving a signal from said torque type specific gravity analyzer* for providing a *conditioned* smokeless air-to-gas burning mixture in the flare with less steam usage and reduced noise.

Re. 31,216

CONTROLLER FOR DC ARC WELDING GENERATORS

Nelson Hairgrove, Sr., Houston, Tex., assignor to Central Welding Supply Co., Inc., Houston, Tex.

Original No. 4,093,845, dated Jun. 6, 1978, Ser. No. 761,580, Jan. 24, 1977. Continuation-in-part of Ser. No. 588,200, Jun. 19, 1975, abandoned. Application for reissue Dec. 20, 1979, Ser. No. 105,570

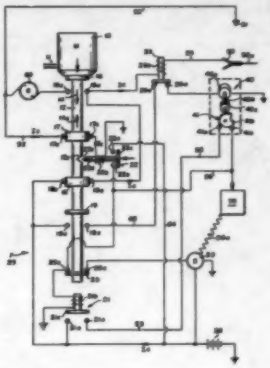
Int. Cl.³ B23K 9/10

U.S. Cl. 219—132 17 Claims

11. In an arc welding system including a DC generator for providing welding current to a welding rod, and an internal combustion engine for powering the DC generator, the engine having a starter and an ignition, the improvement comprising apparatus for controlling the starting and stopping of the engine, which control apparatus comprises:

(a) circuitry for: (i) automatically energizing the ignition and starter of the internal combustion engine, responsive to contact between the welding rod and the material to be welded; (ii) automatically de-energizing the starter responsive to the operation of the engine; and (iii) providing welding current to the welding rod from the DC generator; and

(b) a timer which operates to automatically de-energize the ignition of said engine, when welding has been interrupted for a predetermined period of time, said ignition remaining de-energized until the welding rod again contacts material to be welded.



PLANT PATENTS

GRANTED APRIL 19, 1983

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,040

ROSE PLANT 74-1489-2

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Nov. 6, 1981, Ser. No. 318,969

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—11 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its upright plant habit, glossy foliage, red tipped yellow buds, and lighter yellow open flowers.

5,041

JUNIPER PLANT - CORCORCOR VARIETY

Clifford D. Corliss, Ipswich, Mass., assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Jun. 22, 1981, Ser. No. 276,063

Int. Cl.³ A01H *5/12*

U.S. Cl. Plt.—50 **1 Claim**

1. A new and distinct variety of Juniperus, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of:

(a) an upright evergreen conifer which assumes a columnar configuration which is more dense than the *Juniperus virginiana* parent and substantially similar to that of *Juniperus virginiana Hillii,*

(b) an extremely hardy, vigorous and disease resistant shrub which can be readily sheared within predetermined limits, and which is substantially more vigorous than both *Juniperus virginiana* and *Juniperus virginiana Hillii* and is usually larger than *Juniperus virginiana* and is larger than *Juniperus virginiana Hillii,*

(c) a plant which from a distance is similar in color and shape to the *Juniperus virginiana* parent, but which is much quicker growing and which retains its older foliage for a longer period, giving the new variety a substantially denser appearance,

(d) a facility for propagation which represents a marked improvement over the *Juniperus virginiana* parent, thus making the new variety of particular interest to commercial nurserymen,

(e) mature (e.g., two year old) foliage which is considerably darker in coloration and slightly glossier than that of the *Juniperus virginiana* parent and when compared to *Juniperus virginiana Hillii* is more emerald green rather than the glaucous green coloration of *Juniperus virginiana Hillii,*

(f) young foliage which is a truer and deeper emerald green than *Juniperus virginiana Hillii* and than the slightly grayed-green foliage commonly exhibited by the *Juniperus virginiana* parent,

(g) a much more free-branching character than the *Juniperus virginiana* parent with at least twice the number of shoots on side branches arising from a lateral branch on a main limb than the parent giving the new variety a much denser aspect, and

(h) main, lateral and side branches which are perceptively thicker and more robust than those of the *Juniperus virginiana* parent.

PATENTS

GRANTED APR. 19, 1983

ERRATA

For CLASS	See PATENT NO.
604–180	4,380,234
604–251	4,380,235
604–151	4,380,236
604–028	4,380,239
384–123	4,380,355
384–133	4,380,356
604–386	4,380,450
419–011	4,380,471
419–009	4,380,472
419–041	4,380,473
525–370	4,380,599
382–068	4,380,755

PATENTS

GRANTED APRIL 19, 1983

GENERAL AND MECHANICAL

4,380,090
HIP PROSTHESIS
Pedro A. Ramos, 1960 SW. 27th Ave., Miami, Fla.
Continuation-in-part of Ser. No. 286,532, Jul. 24, 1981, abandoned, which is a continuation-in-part of Ser. No. 177,791, Aug. 13, 1980, abandoned. This application Mar. 10, 1982, Ser. No. 356,881
Int. Cl.³ A61F *1/24, 1/00*
U.S. Cl. 3—1.912 **6 Claims**

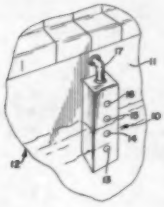
1. An artificial hip joint comprising an artificial hip socket having a first cavity and an opening in a surface of the socket communicating with the first cavity, an annular groove formed in the first cavity adjacent said opening, a sectionalized bearing insert registerably positioned in the first cavity inwardly of said groove, said bearing insert having a second cavity of spherical configuration greater in scope than hemispherical, a femoral component having a ball extending from a neck of reduced diameter, said neck extending through said socket opening positioning said ball in operative, retained engagement in said second cavity, said bearing insert having inner and outer sections, each section being formed with a complementary component of said second cavity, the cavity component of said inner section being approximately hemispherical, said outer section being annular in shape and having an outer surface portion opposite the cavity component thereof adapted to align with said annular groove when said outer section is in operative position in said first cavity, and an open annular spring locking ring having opposite ends formed with tool engaging openings, said locking ring being removably engaged in said annular groove in abutment with said outer surface portion of the bearing insert outer section, said locking ring, when in said groove engagement, being visibly exposed and removably retaining said annular outer section in said first cavity in operative engagement with the inner section whereby said ball is retained in said second cavity, said annular outer section being formed to expand over said ball when the latter is removed from said first cavity.

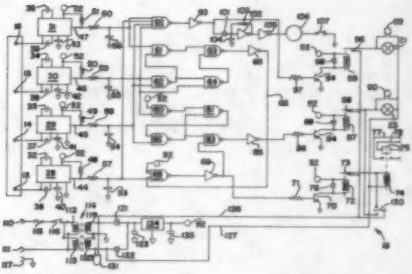
4,380,091
CONTROL CIRCUITRY FOR WATER LEVEL CONTROL OF POOLS
Olin A. Lively, 11821 Welch Rd., Dallas, Tex. 75234
Continuation of Ser. No. 960,585, Nov. 13, 1978, abandoned. This application Dec. 5, 1980, Ser. No. 213,322
Int. Cl.³ E04H *3/16, 3/18*
U.S. Cl. 4—508 **22 Claims**

1. A system for controlling the level of water in a swimming pool, said system being adapted to control a fill valve to add water to the pool as required, and comprising, in combination:

first water level sensing means positioned in said pool for producing a first output signal indicative of the presence or absence of water at a predetermined latch level within the pool;

second water level sensing means positioned in said pool for producing a second output signal indicative of the presence or absence of water at a predetermined normal level within the pool above said latch level;





control circuit means for opening said fill valve in response to said output signal from said first water level sensing means indicating said water level falling below said latch level, and for closing said fill valve in response to said output signal from said second water level sensing means indicating said water level rising to said normal level; and

monitor circuit means responsive to said first and second output signals for disabling operation of said fill valve upon the occurrence of sensing water at said normal level without also sensing water at said latch level.

4,380,092
ACCESSORY FOR USING STEEL WOOL OR OTHER ABRADING MATERIALS
Woodrow W. Brothers, 220 N. Elmhurst Ave., Mt. Prospect, Ill. 60056
Filed Feb. 26, 1981, Ser. No. 238,223
Int. Cl.³ A47L *13/34*
U.S. Cl. 15—209 C **5 Claims**

1. For use with a power sander having a platen that can be oscillated under power, an improved accessory comprising the combination of a sheet of flexible material adapted to extend the entire length of the accessory and moreover be removably secured to the platen, said sheet of flexible material being sized larger than the exposed face of the platen so as to provide an intermediate section that can overlie the platen face and end sections that can be wrapped around the platen ends and be

gripped thereat operable to secure the sheet of flexible material relative to the platen, and a mat area sized approximately the same as the platen face and secured flush against the sheet of flexible material at the intermediate section thereof, the mat area being in the form of the hook portion only of a Velcro-type hook and loop fastener, whereby when the flexible sheet

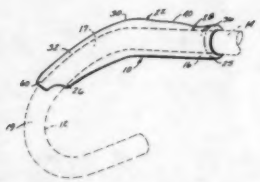
is secured to the platen said mat area is virtually coextensive of and entirely backed by the platen and is rigidly held relative to the platen and the hooks of the Velcro-type hook fastener are exposed and projected away from the platen, whereby an abrading element such as a pad of steel wool can be pressed against and adhered to the mat area operable thereby to allow use of the power sander for powered steel wooling.

4,380,093

BICYCLE HANDLEBAR GRIP

Clyde R. Morgan, Box 302, Coeur d'Alene, Id. 83814

Filed Nov. 28, 1980, Ser. No. 211,297
Int. Cl.³ B62K *21/26*
U.S. Cl. 16—110 R **8 Claims**



1. A handlebar grip for the crossover and turn-of-bar portion of a racing bicycle handlebar in which such portion is substantially tubular about a central axis and includes (1) a substantially straight section extending laterally outward from a central portion of the handlebar, and (2) turn-of-bar section extending from the straight section forward terminating at a drop portion having a brake lower attachment location, comprising:

a flexible "L" shaped body mountable on the crossover and turn-of-bar portion with a complementary annular bore extending from one end to an opposite end to receive the crossover and turn-of-bar portion therein;

said "L" shaped body having (1) a crossover segment extending from the one end along the substantially straight section and (2) a turn-of-bar segment extending from the crossover segment forward to the drop portion terminating at the brake lever attachment location;

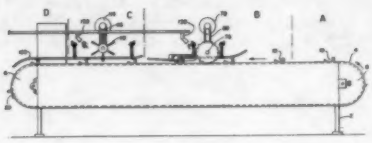
said turn-of-bar segment having an elbow projection formed integrally therewith that projects outward from the central axis to enlarge the turn-of-bar segment and provide support for the heel portion of the biker's hand independently of whether the biker grips the crossover segment in an overhand grip or grips the turn-of-bar section in a side underhand grip.

4,380,094

CRAB PROCESSING MACHINE

Calvert B. Tolley, and Andrew T. Tolley, both of Wingate, Md., assignors to Sea Savory Inc., Cambridge, Md.

Filed Jul. 15, 1980, Ser. No. 169,150
Int. Cl.³ A22C *29/02*
U.S. Cl. 17—71 **1 Claim**



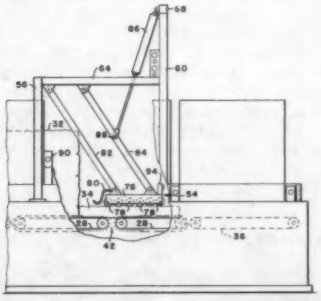
1. A machine for processing whole, cooked, hard crabs, comprising an elongated supporting frame, a plurality of work stations spaced along the length of the machine, an endless belt supported on vertical rotating support and driving wheels at the loading and delivery ends of the frame and having elongated section thereof extending adjacent the work stations, a plurality of crab holders mounted on said belt and spaced along the length thereof, means at each work station for performing an operation on the crab carried by each holder, each of said crab holders comprising two parts the configurations of which are such that they cooperate to snugly support and hold a crab, the parts being separately connected to the belt and spaced apart in the direction of movement of the belt whereby the parts separate to discharge the crab body therefrom as the holder passes about the belt support and driving wheel at the discharge end of the machine, the means at the first work station reached by each crab holder comprising means for holding the crab body in position on its holder and sawing through the carapace and the ends of the crab body longitudinally of the crab body and then cleaning the visceral cavity, the means at the second work station reached by each crab holder comprising means for holding the crab body in position on its holder and cleaning and water spraying the crab body including the visceral cavity, said holding means comprising an elongated rod having an elongated opening therethrough through which water spray passes to the visceral cavity.

4,380,095

AUTOMATIC FIBER BLENDER

Jesse P. Walker, and William H. Robertson, both of Union, S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Nov. 24, 1980, Ser. No. 209,471
Int. Cl.³ D01G *7/06*
U.S. Cl. 19—80 R **7 Claims**



1. Apparatus to automatically pluck fibers from a plurality of bales comprising: a conveyor system including a plurality of

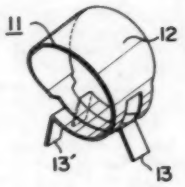
conveyors, means to drive adjacent conveyors in directions opposite to one another, a first means holding a weighted member above said conveyor system in an inoperative position and a second means operably associated with the last conveyors of said conveyor system to sense the height of a bale of fibers in said conveyor, said first means including a means to automatically lower said weighted member from its inoperative position onto the top of a bale on said conveyor when said second means detects that the height of the bale is below a predetermined minimum.

4,380,096

HOSE CLAMP

Haruki Nishida, Ishibashi, and Nobuya Shinozaki, Mooka, both of Japan, assignors to Nissan Motor Co., Ltd. and Kato Hatsujo Kaisha., Ltd., both of Yokohama, Japan

Filed Jul. 13, 1981, Ser. No. 283,067
Int. Cl.³ B65D *63/02*; F16L *33/02*
U.S. Cl. 24—20 R 1 Claim



1. In a cylindrical hose clamp having: a central annular clamping portion formed by bending a resilient flat plate material;

with a first gripping end portion and a pair of flat parallel second gripping end portions, said second end portions defining a travel track therebetween, said first end portion having a tongue so designed as to engage and travel along said track so as to expand the diameter of said hose clamp;

the improvement therein wherein said clamping portion is formed in an expanded shape such that the width of the clamping portion where the maximum stress is applied is at a maximum so that the forces causing stress are at predetermined locations of said clamping portion, said width B of said clamping portion being obtained according to the following mathematical formula:

$$B = \frac{M}{\sigma'_1 rt}\left(1 + \frac{1}{\kappa}\,\frac{t}{2r+t}\right) + \frac{N}{\sigma'_1 t}$$

or

$$B = \frac{M}{\sigma'_2 rt}\left(1 - \frac{1}{\kappa}\,\frac{t}{2r-t}\right) + \frac{N}{\sigma'_2 t}$$

where δ_1' and δ_2' represent reference stresses like allowable stresses and

M: bending moment acting on the calculated clamp cross section

N: axial force acting on the calculated clamp cross section

r: radius of curvature of the neutral axis of a bending beam under the condition that said hose clamp is regarded as a bending beam

t: thickness of said clamping portion

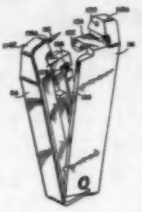
κ: constant.

4,380,097

PRODUCT MONITORING DEVICE

Terry A. Keifer, Pottstown, Pa., assignor to Check Mate Systems, Inc., King of Prussia, Pa.

Filed Oct. 17, 1980, Ser. No. 198,277
Int. Cl.³ G08B *13/14*
U.S. Cl. 24—160 8 Claims



1. A releasable locking device adapted to be secured to a product, comprising:

a pair of relatively moveable members;

a locking element movable between a locking position in which said members are locked together and a release position in which said members are unlocked from each other to permit relative motion thereof;

means for operatively controlling actuation of said locking element to control the locking and unlocking of said members;

said members including a pair of arms, one of said arms mounting at its terminal end at least one pin member engagable in at least one socket in the terminal end of the other arm;

said terminal ends being adapted for movement to mating contacted positions as said members are moved to the locked positions thereof;

one of said ends having a groove therein;

the other of said ends having a projection thereon;

said projection being operatively engaged within said groove as said members are moved to the said locked position thereof and when so engaged constituting means opposing relative twisting of one moveable member with respect to the other and deterring disengagement of said ends by a relative twisting movement therebetween.

4,380,098

SLIDE FASTENER STRINGER

Takeo Fukuroi, Uozu, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Dec. 10, 1980, Ser. No. 215,059
Claims priority, application Japan, Dec. 26, 1979, 54-185262[U]
Int. Cl.³ A44B *19/04*
U.S. Cl. 24—205.16 R 2 Claims

1. A slide fastener stringer comprising:

(a) a tape made essentially of thermoplastic fibers having a longitudinal edge portion including a bead extending longitudinally therealong, there being a series of openings formed in and along said longitudinal edge portion, each

of said openings being located closely adjacent to said bead and each opening being defined by a rigid marginal edge constituted by fused tape fibers;

(b) a series of discrete coupling scoops made of a synthetic resin and mounted on and along said longitudinal edge portion, each in registration with only one of said openings, each of said scoops having a coupling head, an upper leg and a lower leg, said upper and lower legs being disposed astride the opposite surfaces of said longitudinal edge portion, each said opening extending closely along and between marginal edges of each pair of scoop legs;

(c) said bead having a width in the range of one-third to two-fifths of the length of said scoop legs; and

(d) a series of separate connecting strips individually accommodated in one of said openings and respectively interconnecting said upper and lower legs.

4,380,099

ATTACHMENT DEVICE FOR COMPONENTS MOUNTED IN RECESSES IN VEHICLE BODYWORK

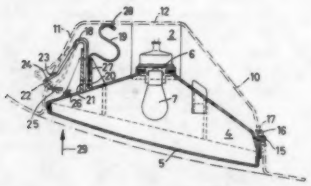
Heinz Dick, Odenthal, and Hans Lux, Cologne, both of Fed. Rep. of Germany, assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 29, 1981, Ser. No. 287,847

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1980, 3044313

Int. Cl.³ A44B *21/00*

U.S. Cl. 24—211 P **6 Claims**



1. Attachment device for a component mounted in a recess in a vehicle bodywork with clamps, supports and holders that are operatively disposed between the component and the walls of the recess and which interact with apertures formed in the walls of the recess in order to hold the component in an easily detachable fashion in the bodywork;

the attachment comprising:

a holder on the component in the form of a swivel pin interacting with a recess wall aperture;

a substantially V-shaped clamp interacting with a complementarily formed aperture in the wall of the recess in such a way that when the component is in its normal position a head of the clamp engages in the aperture;

an S-shaped flexible support interposed between the component and the recess wall exerting an outward biasing force on the component when in said normal position; and in the event of an inwards movement of the component beyond the normal position against the biasing force of the support the head being released from the aperture by a bevel on the clamp;

the clamp then interacting with the aperture and being held in a loose position by means of a catch on one edge of a detent fixed on the component.

4,380,100

SAFETY BELT BUCKLE

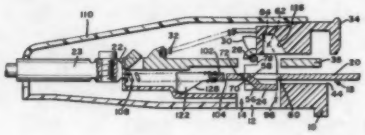
Terrence S. Crisp, Haasrode, Belgium, assignor to Klippan S.A., Haasrode, Belgium

Continuation of Ser. No. 953,241, Oct. 20, 1978, abandoned, which is a continuation of Ser. No. 781,918, Mar. 28, 1977, abandoned. This application Jan. 24, 1980, Ser. No. 114,811

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1976, 2651115

Int. Cl.³ A44B *11/26*

U.S. Cl. 24—230 AL **4 Claims**



1. A seat belt buckle comprising:

an inlet slot for receiving a tongue;

a latch movable between lock and unlock positions, said latch including a latching surface for engagement with said tongue when said latch is in its lock position whereby said tongue is retained in said buckle, said latch including a lock bar receiving surface, said latch normally being disposed in its unlock position;

a push button slidably disposed in said buckle;

a push button spring biasing said push button to a forward position, said push button being movable against the bias of said spring to a rearward position at which said latch is moved to its unlock position to release said tongue;

a lock bar slidably movable with said push button, said lock bar normally being spaced from said lock bar receiving surface of said latch, said lock bar being movable into engagement with said lock bar receiving surface of said latch upon insertion of said tongue into said buckle and movement of said latch to its lock position to retain said latch in said lock position, said lock bar being movable out of engagement with said lock bar receiving surface upon movement of said push button to its rearward position to release said latch from its lock position; and

an ejection bar for ejecting said tongue from said buckle when said push button is moved to its rearward position; said latch comprising cam means engagable by said lock bar, said cam means comprising an upstanding element having a curved underside surface adjacent a slot, said slot defining said lock bar receiving surface, said lock bar being movable along said underside surface to move said latch into its lock position, and said lock bar being further movable along said underside surface into said slot, whereby said latch is retained in its lock position.

4,380,101

TIE HOOK, PARTICULARLY RUBBER SPRING HOOK

Antoine Joubert; Thierry Joubert; Bernard Bichard, and Jean Joubert, all of Ambert, France, assignors to Joubert S.A., Ambert, France

Filed Sep. 2, 1980, Ser. No. 183,045

Claims priority, application France, Jul. 15, 1980, 80 15612

Int. Cl.³ A44B *13/02*

U.S. Cl. 24—237 **9 Claims**

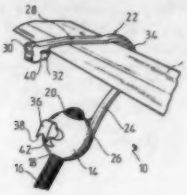
1. A hook for hitching a tie, said hook comprising:

an anchorage block having a through passage to receive the tie;

a recess formed in the anchorage block; and

an open hooking loop having two arms substantially symmetrical with reference to the through passage, a base spaced from the anchorage block and serving to join said arms to form the loop, said loop being substantially coaxial with said through passage, one arm of the loop being

integral with the anchorage block and the other arm of the loop being free and being movable laterally away from or towards the block and having a nose directed towards the base of the loop and adapted to enter the recess of the



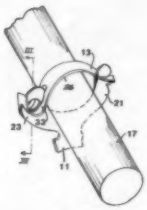
block for engagement with the block to close the loop, said nose being pointed and the recess having a corresponding but hollow shape to cause self-centering of the nose in the recess.

4,380,102

CLASPING DEVICE

Erik G. Hansson, Stughemmet, S-56242, Sandhem, Sweden

Filed Jul. 7, 1980, Ser. No. 166,233
Claims priority, application Sweden, Jun. 2, 1980, 8004095
Int. Cl.³ A44B *24/00*
U.S. Cl. 24—248 SA **14 Claims**



1. A clasping device for releasably tightly clasping an object, comprising:

base means;

hasp means; and

conical screw means;

said base means having: means defining an exterior surface thereof for receiving an object thereon; a first end and a second end disposed on opposite sides of said surface, said first end having: means defining an opening therein having an area substantially larger than at least the smallest cross-sectional area of said conical screw means; and edge means having a thickness for engaging within the grooves of said conical screw means and allowing longitudinal displacement of said conical screw means upon rotation thereof when in engagement with said edge means; and

said hasp means having: means defining an exterior surface thereof for receiving an object thereon; a first end and a second end of said hasp means disposed on opposite sides of said surface, said hasp means second end operatively pivotally mounted to said base means second end; said hasp means first end having curved surface means for engaging said conical screw means so that as said conical screw means passes through said base means first end opening, with said base and hasp means second ends in operative engagement, it engages said edge means and said hasp means first end curved surface, and as it is rotated it moves longitudinally of said edge means and moves said edge means and curved surface further apart, which in turn moves said hasp and base means object-receiving surfaces closer together; and

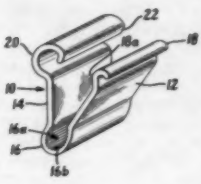
said hasp means being so constructed that as said hasp means first end curved surface means is engaged by said conical screw means a bending of said first end takes place as said object-receiving surface means is straightened, effecting tightly clamping of an object received thereby.

4,380,103

BALLOON CLIP

John E. McGrath, 456 Glen Mar Rd., Glen Burnie, Md. 21061, and Earl Wilson, 2922 N. Seminary Ave., Chicago, Ill. 60657

Filed Jul. 21, 1981, Ser. No. 285,586
Int. Cl.³ A63H *3/06*; A44B *21/00*
U.S. Cl. 24—255 SL **8 Claims**



5. A clip device of unitary construction for sealing an object such as the valve of a balloon, flexible tubing and the like comprising first and second arms connected by an integral hinge which hinge defines an interior clamping area, said first and second arms having interior and exterior surfaces and coacting locking means on the extended ends thereof,

said locking means on said first arm comprising a first C-shaped flange opening toward said exterior surface of said first arm,

said locking means on said second arm comprising a second C-shaped flange, being slightly larger than said first C-shaped flange and adapted to overlie and substantially conform to said first C-shaped flange when said clip device is in a closed position, said second C-shaped flange further comprising a flat lip formed at the terminus of said second C-shaped flange extending laterally across said second arm and directed toward said interior clamping area,

said first and second arms being urged toward each other into said closed position after the object to be sealed is inserted into said interior clamping area so that when said first C-shaped flange abuts said inwardly directed lip said second C-shaped flange is deflected until said first C-shaped flange is within said second C-shaped flange, said inwardly directed lip thereby locking said first C-shaped flange within said second C-shaped flange thereby to retain said object within said interior clamping area.

4,380,104

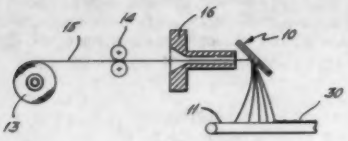
APPARATUS FOR SEPARATING THE FILAMENT BUNDLE OF FIBROUS MATERIAL

Seiichi Kamioka, 390-5, Shimonogo-cho, Moriyama-shi, Shiga-ken; Masahiko Manabe, B3-22,10, Sonoyama 2-chome, and Rokuro Sakai, 4-25-1, Sonoyama 2-chome, both of Ohtsu-shi, Shiga-ken, all of Japan

Filed Jan. 16, 1981, Ser. No. 225,740
Claims priority, application Japan, Jan. 18, 1980, 55-3599
Int. Cl.³ D01D *11/02*
U.S. Cl. 28—282 **11 Claims**

1. An apparatus for separating filaments in a filament bundle, which comprises a nozzle for ejecting the filament bundle, means for ejecting said filament bundle from said nozzle, an impingement plate having a surface composed of a material

that negatively electrically charges the surfaces of the filaments of the fiber bundle upon impact, said plate being positioned adjacent said nozzle so that the filament bundle is projected against said surface of said impingement plate.



4,380,105

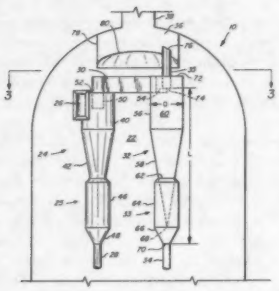
METHOD FOR SHAPING, FORMING AND ASSEMBLING A HIGHLY EFFICIENT CYCLONE SEPARATOR

John P. MacLean, Stafford; J. Edward Cantwell, Houston; John D. Brown, The Woodlands, and Harold D. Hoy, Bridge City, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 38,757, May 14, 1979, abandoned, which is a continuation-in-part of Ser. No. 865,051, Dec. 27, 1977, abandoned. This application Jul. 7, 1980, Ser. No. 166,714

Int. Cl.[3] **B23P** *15/00;* **B01D** *45/12*

U.S. Cl. 29—157 R **1 Claim**



1. A method for shaping, forming, and assembling a cyclone separator (32) comprising the steps of,

(a) assembling an intermediate partly tapered portion (58,64) from a conical portion (58) and a barrel section dust bowl (33), the dust bowl including an upper cylindrical barrel section (64) joined to a lower conical section (66) and having a solids entrance (62) of a particular and precise diameter,

(b) interconnecting a cylindrical portion (56) and a lower dipleg (34) with the intermediate partly tapered portion (58,64) having a solids outlet (70) for forming a cyclone separator housing (32),

(c) mounting an inlet means (54) having an inlet area (I) in the upper portion of said cyclone separator cylindrical housing portion (56) and shaped for receiving gases with entrained solids therein at a velocity in the range of 52 feet per second to 80 feet per second,

(d) attaching a gas outlet tube (35) defining a solids-free-gas outlet (74) having an area (O) to the upper portion of the separator cylindrical housing portion (56) and shaped for receiving solids-free-gas at a velocity in the range of 52 feet per second to 200 feet per second,

(e) shaping the solids-free-gas outlet area (O) to the separator inlet area (I) proportional to the range of substantially O/I=0.4/1 to 1.0/1.0, and

(f) shaping the dust bowl solids entrance diameter relative to the diameter D of the cyclone separator cylindrical housing portion (56) in the range of substantially 0.05 D to 0.2 D and disposing the junction of the barrel section (64) and the conical section (66) of the dust bowl so as to lie in a plane which passes through the apex (68) of the projection of the conical portion (58),

(g) forming the solids outlet (70) on the housing by a distance (L) from the gas outlet (74) proportional to the diameter (D) of the cyclone separator cylindrical portion (56) in an amount so that $L/D=4.49-1.09\ (O/L)$ for providing maximum efficiency with minimum erosion of both the cyclone separator internal wall surface and of the separated solids.

4,380,106

ASSEMBLY APPARATUS

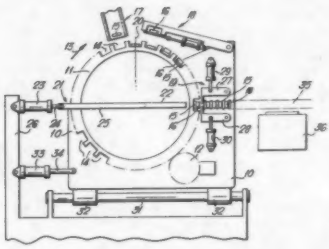
Karl G. Jonason, Västerås, Sweden, assignor to Gränges Metallverken Aktiebolag, Västerås, Sweden

Filed Oct. 30, 1980, Ser. No. 202,419

Claims priority, application Sweden, Nov. 2, 1979, 7909122

Int. Cl.[3] **B23P** *15/26*

U.S. Cl. 29—157.3 A **11 Claims**



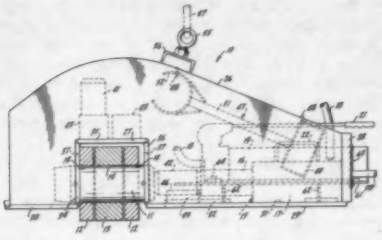
1. An apparatus for assembling a heat exchanger core comprising tubes and associated fin elements in thermal contact with the tubes said apparatus comprising a means for receiving the tubes and the fin elements and delivering these elements in an alternate relationship to a transportation path, means arranged adjacent the transportation path for interconnecting the adjacent tubes and fin elements, an ejecting device for expelling the tubes and the fin elements from the receiving means to the transportation path in the direction of transportation of tubes and fin elements along the transportation path, and advancing means which cooperate with said removing or ejecting device to advance the tubes and the fin elements along the transportation path, wherein the said ejecting device has operating means which cause the removing or ejecting device, during each expelling cycle of operation, firstly to move in the forward direction to expel a tube and fin element from said receiving means at first speed, and secondly to move in the forward direction at a second speed, slower than said first speed, to advance the tubes and fin elements along said transportation path, said second speed being substantially equal with the advancing speed of the advancing means, the arrangement being such that the tube and the fin elements are brought into abutment against each other and are then moved continuously and with a substantially even speed along the transportation path past the means for interconnecting the adjacent tubes and the fin elements.

4,380,107

CONNECTOR PIN HANDLING DEVICE

Dennis I. Andress, Two Rivers, Wis., assignor to The Manitowoc Company, Inc., Manitowoc, Wis.

Filed Feb. 15, 1978, Ser. No. 877,903
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—252 **3 Claims**



1. A device for handling connector pins comprising, in combination, a pair of frame plates having alined notches to fit over structural members with holes to receive connector pins, said plates being connected with a butt plate and a bed plate defining a jack receiving trough, a hydraulic jack with a piston in a cylinder rested in said trough, said plates and trough being sufficiently long to receive a pin between said notches and said jack when said piston is in said cylinder and the jack is adjacent said butt plate so that hydraulically extending the piston will force the pin transversely of the notches and into holes in members in said notches, said frame plates having a pin receiving tray on the side of said notches opposite said jack for receiving the pin when the jack is used to force a pin from members in said notches, and a pin carrying tool having a handle and a pin embracing portion, and a pair of auxiliary push pins for extending the reach of said jack by being inserted between said jack and a connector pin, and said side frames having sockets for storing said push pins and hooks for storing said tool.

4,380,108

UNIVERSAL JOINT FLEXURE HINGE SUSPENSION SYSTEM, AND METHOD FOR MANUFACTURING THIS SYSTEM

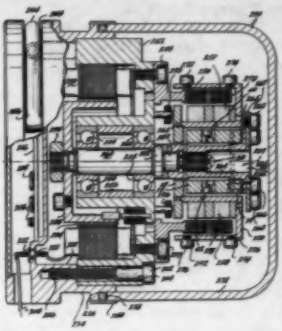
Robert J. G. Craig, Malibu, Calif., assignor to Incosym, Inc., Westlake Village, Calif.

Division of Ser. No. 822,384, Aug. 5, 1977, abandoned. This application May 19, 1980, Ser. No. 150,743
Int. Cl.³ G01C *19/04*
U.S. Cl. 29—434 **9 Claims**

1. A method for making a tuned inertial instrument comprising the steps:

(a) assembling together in a first assembly, a rotor shaft and an inertially sensitive element gimballed thereto with at least one axis of rotational freedom substantially orthogonal to said rotor shaft;

(b) rotatably mounting said rotor shaft in a second assembly including motor means for rotating said rotor shaft, said second assembly further including electro-magnetic means for applying restoring torques to said inertially sensitive elements; and



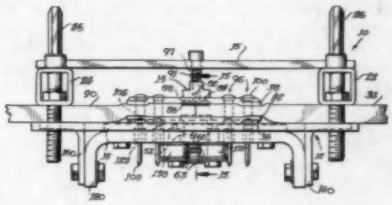
(c) mounting said assembled first assembly and said second assembly into a unitary, single compartment interior, substantially air-tight from an outside environment.

4,380,109

METHOD FOR APPLYING BELT FASTENERS TO A BELT

Winston C. Pray, Lombard, Ill., assignor to Flexible Steel Lacing Company, Downers Grove, Ill.

Division of Ser. No. 948,971, Oct. 5, 1978, Pat. No. 4,258,461. This application Nov. 17, 1980, Ser. No. 207,300
Int. Cl.³ B23Q *3/00*; B21D *39/00*; B23P *11/02*
U.S. Cl. 29—466 **7 Claims**



1. A method of fastening ends of a belt together with upper and lower belt fasteners secured to the belt by rivets upset by an anvil means, said method comprising the steps of:

securing lower plate fasteners in an aligned position over the anvil means with rivet receiving openings in the lower plate fasteners aligned with rivet upsetting portions of the anvil means;

aligning the belt ends over the centers of the lower plate fasteners; holding a plurality of sets of aligned upper plate fasteners on the upper side of an elongated bar and inverting the bar and placing the bar with the upper plate fasteners held thereon over the belt ends longitudinally along the belt ends;

securing said sets of upper plate fasteners while held on said bar in an aligned position over the belt ends with rivet receiving openings in the upper plate fasteners aligned with rivet receiving openings of the lower plate fasteners and with the rivet upsetting portions of the anvil; and

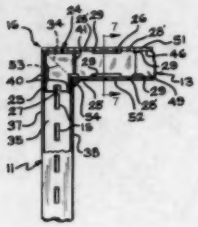
driving the rivet fasteners through the upper plate fasteners while held on said bar, the belt ends and the lower plate fasteners into the anvil means and upsetting the lower ends of the rivets against said lower plate fasteners.

4,380,110

METHOD OF FORMING A MITERED JOINT

Robert G. Harig, Paragould, Ark., assignor to Darling Store Fixtures, Paragould, Ark.

Filed Nov. 24, 1980, Ser. No. 209,909
Int. Cl.³ B23P *19/02*
U.S. Cl. 29—525 **3 Claims**



1. A method for forming a mitered joint between ends of two tubular members, said joint connecting said members at a predetermined angle, comprising the steps of:

(1) shaping the end of each member to extend at an angle of one half of the predetermined angle;

(2) connecting one leg of an insert having two legs extending at said predetermined angle to the interior of one of said members with the other insert leg extending from said end of said one member said other insert leg having at least one projection extending from the side of said other leg, said projection disposed for engaging the interior of the other of said members;

(3) trimming said projection on said other insert leg to align said other insert leg for forming said joint and to insure an interference fit between said other insert leg and said other member;

(4) pressing said end of the other of said members onto said other insert leg until said member ends abut and said members form a joint extending at the predetermined angle, said other insert leg creating an interference fit with said other member to maintain said other member in position for forming said mitered joint, said abutting ends defining a line extending around said members and including inner and outer portions; and

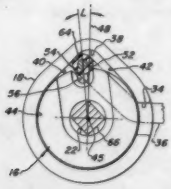
(5) welding said members ends together only along the inner portion of the line between said abutting ends.

4,380,111

CUTTING, STRIPPING AND WRAPPING BIT

Clifford L. Galloup; Roger M. Bula, both of Reed City; Robert W. Klemm, Hersey, and Ralph E. Westerburg, Jr., Reed City, all of Mich., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Sep. 8, 1980, Ser. No. 184,763
Int. Cl.³ H01R *43/04;* **B21F** *15/04*
U.S. Cl. 29—564.4 **14 Claims**



1. In a device for stripping insulation from a flexible conductor wire and wrapping said wire on a terminal in a series of helical convolutions:

a rotatable wrapping bit having an elongated cylindrical body and including groove means forming a longitudinal conductor wire receiving groove disposed along the periphery of said bit and radially displaced from the axis of rotation from said bit;

an elongated cylindrical tubular sleeve, said sleeve including guide surface means forming a guide surface extending generally axially from one end of said sleeve and positioned to be in alignment with said groove means in a starting position of said bit with respect to said sleeve to provide for inserting an insulated conductor wire into said groove means; said guide surface having a substantially flat surface portion, and,

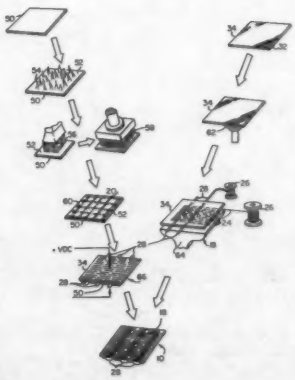
insulation cutting means interposed in said groove means, said insulation cutting means including a first substantially straight cutting edge portion, oriented relative to said guide surface means such that, at the point of contact of said cutting edge portion with the flexible conductor insulation, said cutting edge portion is essentially parallel to said substantially flat surface portion of said guide surface means for forcibly engaging said insulated conductor wire between said first cutting edge portion and said substantially flat surface portion upon initial rotation of said bit to commence cutting said insulation.

4,380,112

FRONT SURFACE METALLIZATION AND ENCAPSULATION OF SOLAR CELLS

Roger G. Little, Bedford, Mass., assignor to Spire Corporation, Bedford, Mass.

Division of Ser. No. 181,106, Aug. 25, 1980, abandoned. This application Sep. 14, 1981, Ser. No. 301,480
Int. Cl.³ H01L *31/18*
U.S. Cl. 29—572 **4 Claims**



1. A method of front surface metallization and encapsulation for solar cells comprising:

(a) providing a transparent plate having inner and outer surfaces;

(b) heating said plate so as to soften its said inner surface;

(c) pressing a mesh of wires fed from spools into said softened plate inner surface;

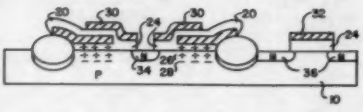
(d) providing a semiconductor wafer having front and rear semiconductor strata; and

(e) bonding said plate inner surface, together with said mesh of wires embedded therein, to said semiconductor wafer.

4,380,113
PROCESS FOR FABRICATING A HIGH CAPACITY MEMORY CELL

Manohar L. Malwah, Sunnyvale, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Nov. 17, 1980, Ser. No. 207,275
Int. Cl.³ H01L 29/78
U.S. Cl. 29—577 C 9 Claims



1. A method of fabricating a high capacity memory cell, comprising:

(a) forming isolation regions in a surface of a semiconductor substrate patterned to produce a multiplicity of cell areas;

(b) forming an insulating layer over the entire surface of said cell areas;

(c) introducing ions having majority carriers of first conductivity type throughout the entire area of said insulating layer;

(d) introducing ions having majority carriers of second conductivity type opposite said first conductivity type throughout the entire area of the semiconductor surface.

(e) forming a first pattern of conductive material over said insulating layer to form a storage gate and to define a storage region beneath said storage gate extending to an isolation region and to define a transfer region spaced from said isolation region by said storage region;

(f) removing said insulating layer from the portion lying above said transfer region and from other active areas to selectively remove ions having majority carriers of said first conductivity type;

(g) removing ions having majority carriers of said second conductivity type from said transfer region and other active areas by forming an oxide layer on the semiconductor surface where said insulating layer is removed;

(h) diffusing ions having majority carriers of said first conductivity type from said insulating layer to said storage region to produce in said storage region a shallow ion layer having majority carriers of said first conductivity type and beneath said shallow ion layer a deep ion layer having majority carriers of said second conductivity type; and

(i) forming a second pattern of conductive material over said transfer region to define a bit line region spaced from said storage region by a portion of said transfer region and to produce a transfer gate overlying said transfer region portion and also insulated from and partially overlying said storage gate.

4,380,114
METHOD OF MAKING A SEMICONDUCTOR SWITCHING DEVICE

Monty F. Webb, Richardson, Tex., assignor to Texcor Electronics, Inc., Irving, Tex.

Division of Ser. No. 29,263, Apr. 11, 1979, abandoned. This application Feb. 20, 1981, Ser. No. 236,258
Int. Cl.³ H01L 21/603, 21/28, 21/302, 21/56
U.S. Cl. 29—588 4 Claims

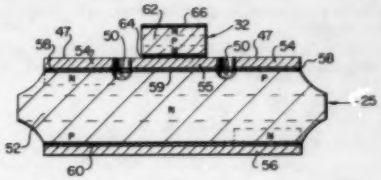
1. A method of making a semiconductor switching device comprising:

providing a semiconductor wafer having a plurality of defined zones arranged in a two-dimensional array, each zone having a plurality of regions of alternate conductivity type constructed and arranged to permit one of said semiconductor switching devices to be formed from the semiconductor chip defined by one of said zones once separated from the wafer;

applying molten solder to said wafer;

applying a copper foil having a thickness of approximately 1 to 5 mils over the solder covering at least one major face of the wafer;

uniformly pressing the copper foil and wafer together with sufficient force to cause the molten solder to flow laterally and then harden to a uniform thickness, said solder thickness being several times thinner than the thickness of said copper foil;



selectively etching away portions of said copper foil and underlying solder along the boundaries of said zones and in gate regions defined in each zone;

bonding a trigger element to the gate region within each zone;

breaking said wafer along the boundaries between zones to provide separate semiconductor chips;

bonding one of said chips onto a terminal;

bonding a cathode lead to a portion of said copper foil atop said chip;

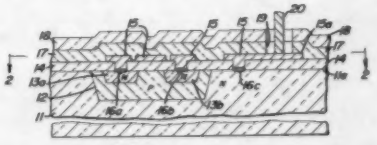
bonding a gate lead atop said trigger element; and

encapsulating said chip, trigger element, terminal and leads.

4,380,115
METHOD OF MAKING A SEMICONDUCTOR DEVICE WITH A SEAL

Louis N. Pomante, Lansdale, Pa., assignor to Solid State Scientific, Inc., Montgomeryville, Pa.

Division of Ser. No. 100,905, Dec. 6, 1979, abandoned. This application Aug. 17, 1981, Ser. No. 293,200
Int. Cl.³ H01L 23/02
U.S. Cl. 29—588 11 Claims



1. A method of fabricating a semiconductor device comprising the steps of:

(a) forming a layer of metal overlying a major surface of a semiconductor body, and removing parts of said metal layer to leave a pattern thereof overlying said semiconductor surface,

(b) forming an insulating passivating layer of silicon dioxide overlying and contacting said patterned metal layer,

(c) forming a passive sealing silicon layer overlying and contacting the insulating layer by placing said semiconductor device with said patterned metal layer and insulating layer formed thereon in a chamber containing an atmosphere including a gas which decomposes and depoits silicon at a temperature below 525° C. for a time duration sufficient to form a deposit of silicon in the range of 500 to 3000 A thick approximately, and

(d) etching windows in the sealing silicon layer and insulat-

ing layer to provide openings to receive terminal connections to said metal layer.

4,380,116

RADIANT ELECTRICAL HEATER, AS WELL AS METHOD AND APPARATUS FOR THE MANUFACTURE THEREOF

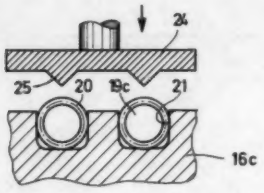
Gerhard Gössler, Oberderdingen, and Eugen Wilde, Knittlingen, both of Fed. Rep. of Germany, assignors to E.G.O. Elektro-Geräte Blanc u. Fischer, Oberderdingen, Fed. Rep. of Germany

Filed Dec. 4, 1980, Ser. No. 212,802

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1979, 2950302

Int. Cl.³ H05B *3/00*

U.S. Cl. 29—611 9 Claims



1. A method for manufacturing a radiant electrical heater, wherein a support is made from an electrically and thermally insulating material and slots are formed therein for receiving helical heating resistor coils, comprising the further step of deforming at least one of the support and the heater coils, while the support is in a prehardened condition, whereby portions of the support will at least partially surround portions of the heater coils for securing the heater coils in the slots.

4,380,117

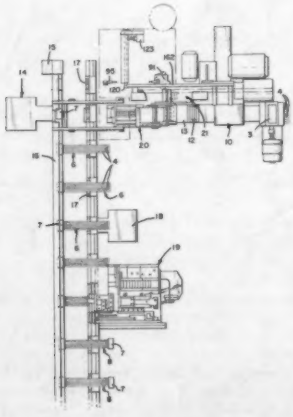
ELECTRICAL HARNESS FABRICATING APPARATUS

Joseph E. Brandewie, Dunedin, and Granville S. Hart, Clearwater, both of Fla., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 26, 1981, Ser. No. 267,104

Int. Cl.³ H01R *43/04*

U.S. Cl. 29—742 4 Claims



1. Improved apparatus for terminating the leading ends of a plurality of wires to a like plurality of terminals in a linear array and inserting the terminated leads into a linear array of cavities in a connector housing, said apparatus being of the type having an operating zone having a terminating station therein, an insertion station where terminated ends are inserted into a connector housing, and a reciprocable wire delivery shuttle having telescoping wire guide tubes and releasable wire gripping means thereon, characterized in that

said shuttle is reciprocable on a first path from said operating zone to a point remote therefrom, said shuttle being reciprocable on a second path from said insertion station to said point remote from said operating zone, said first path and said second path being colinear along part of their lengths proximate to said remote point, said paths diverging obliquely as they approach the respective stations, whereby,

said shuttle positions said leading ends for terminating at said terminating station, retreats therefrom along said first path without passing through said insertion station, and advances along said second path to insert the terminated ends into said cavities in said connector housing.

4,380,118

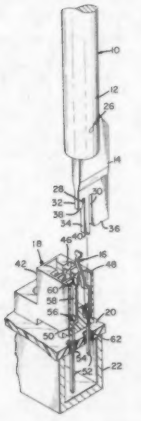
TERMINAL INSERTION TOOL

Donald E. Driver, Shermanstown, and John W. Kaufman, Hershey, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 13, 1981, Ser. No. 292,564

Int. Cl.³ H01R *43/00*

U.S. Cl. 29—747 4 Claims

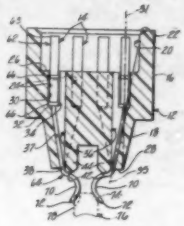


1. A hand tool for inserting individual replacement terminals into a housing of an electrical connector pre-mounted on a circuit board, each said terminal having an active portion forming electrical and mechanical contact with a respective conductive hole in said board, an intermediate shoulder for receiving an axial thrust, and a free end profiled to be preloaded in said housing, said tool having a handle with an insertion head secured to one end thereof, characterized in that said insertion head has a trident configuration, the arms of which secure a free end of the replacement terminal in a pre-loaded condition, engage an intermediate shoulder of the terminal to apply an insertion force thereagainst, and engage said housing to guide the movement of the tool with respect thereto whereby said replacement terminal is inserted into the housing in a pre-loaded condition.

4,380,119
METHOD OF MAKING AN ELECTRICAL CONNECTOR ASSEMBLY

Richard W. Normann, Otego, and LeRoy W. Fairbairn, Sidney, both of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 116,055, Jan. 28, 1980. This application Apr. 20, 1981, Ser. No. 255,200
Int. Cl.³ H01R 43/00
U.S. Cl. 29—884 8 Claims



1. A method of making an electrical connector assembly including a body of dielectric material having a plurality of passages extending therethrough from a front face to a rear face and further including a plurality of electrical contacts, each electrical contact being adapted to mount within one respective passage and each having a body portion at one end thereof and a termination portion extending from the body portion, the steps of method comprising:

molding the body to form the passages, each of said passages forming on each respective face an array of spaced-apart openings disposed in straight line rows, the front face array of openings describing a grid comprising four spaced-apart rows and the rear face array of openings describing a grid comprising two spaced-apart rows,

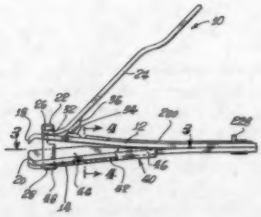
inserting the contacts into their respective passages so that the termination portions extend beyond the rear face of the body and the body portions of the contacts are adjacent the front face, and

bending the termination portions of the contacts so that the ends of the termination portions extending beyond the rear face form two rows.

4,380,120
NAIL CLIPPING RETAINER

William B. Hannon, P.O. Box 187, Kihei, Hi.

Filed Feb. 9, 1981, Ser. No. 232,503
Int. Cl.³ A45D 29/02
U.S. Cl. 30—28 2 Claims

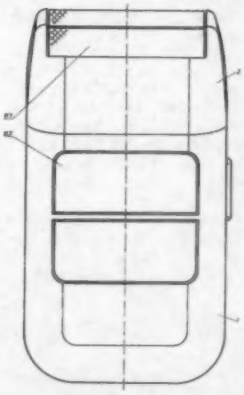


1. A nail clipping retainer means to be removably attached to a nail clipping device of the class which includes a stationary plate means cooperating with a movable plate means which in turn are joined together at one end and have at the opposite ends of said stationary and movable plate means cutting edges of the type that cut toe and finger nails, said movable plate means being moved relative to said stationary plate means by a pivoted lever means, said nail clipping retainer means includes: a "U"-shaped elongated channel means; a central web means of said channel means; parallel side wall means integrally formed with said central web means and said wall means projecting normally from central web means; said side wall means of a height that forms a compartment for retaining clipped toe and finger nails after being clipped by said cutting edges; the terminating upper surface of said side walls being parallel to said stationary plate means of at least one half the length of said elongated "U"-shaped channel means; the said terminating upper surface of said side walls being not parallel to the movable plate means along the one half of the length of said elongated "U"-shaped channel means so that when the movable plate means is in its opened position there will be a tapered opening between said movable plate means and the terminating upper surfaces of said side walls which are parallel to said stationary means for at least half the length of the elongated "U"-shaped channel means in order that clippings may be disposed from the interior of the clipper by use of the opening existing between the parallel side walls and the movable plate means; said second half of said upper surface being parallel to said movable plate means and extending to the end of said "U"-shaped elongated channel means which is at the end of said elongated channel means nearest said point of joining together of said movable and stationary plate means; and retaining means located on said side walls for removably retaining said "U"-shaped elongated channel means to said stationary plate means.

4,380,121
ELECTRIC SHAVER

Gundolf Naimer, and Kurt Hauer, both of Graz, Austria, assignors to Payer-Lux Elektroprodukte Gesellschaft m.b.H., Graz, Austria

Filed Apr. 1, 1981, Ser. No. 249,971
Claims priority, application Austria, Apr. 3, 1980, 1838/80
Int. Cl.³ B26B 19/38
U.S. Cl. 30—42 4 Claims



1. In an electric shaver having a casing, a shear head, a driving motor for the knife, and an on-off switch provided in the motor circuit, the improvement comprising an electronic sensor switch (5) which is electrically connected to a contact plate (K2) on the outside of the casing (1) with the gripping zone and to the shear face (K1) of the shear head (2) and shear foil, the terminals (53, 54)) of the sensor switch (5) being connected to the control circuit of an actuating means (RL) for opening and closing the motor circuit.

4,380,122

CUTLERY IMPROVEMENTS FOR AIDING EFFECTIVE AND CORRECT USE THEREOF

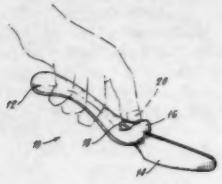
Peter C. Jagger, Cuckfield, England, assignor to Little People Limited, Hong Kong, Hong Kong

Filed Sep. 16, 1980, Ser. No. 187,722

Claims priority, application United Kingdom, Sep. 17, 1979, 32098/79

Int. Cl.³ B25G 3/00

U.S. Cl. 30—343 17 Claims



1. A piece of cutlery having a longitudinal center line, said cutlery piece comprising

a handle having an upper surface and a front end,

an operative portion joined to said handle's front end,

a recess positioned adjacent the joint between said operative portion and said handle's front end, said recess being provided in said handle's upper surface and being centered on said longitudinal center line, and said recess being of a size to accommodate and locate the tip of the index finger of a user's hand when the user's hand grips said handle; and

a rim defining the peripheral edge of said recess, said rim having a front wall adjacent said operative portion and opposed side walls extending from said front wall toward said handle's rear end, the depth of said recess defined by said front and opposed side walls of said rim being sufficient to prevent accidental longitudinal displacement of the tip of the index finger of a user's hand out of said recess toward said operative portion, and being sufficient to prevent accidental lateral displacement of the index finger of a user's hand out of said recess in a sideways fashion, when the user's hand is holding said handle during normal usage of said piece of cutlery.

4,380,123

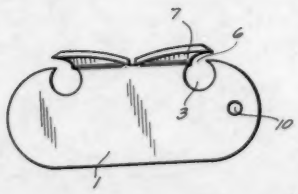
TOOL FOR OPENING A CAN OR THE LIKE

Ayzik Blyakharov, 31-77 32 St., Astoria, N.Y. 11106

Filed Jun. 7, 1979, Ser. No. 46,565

Int. Cl.³ B67B 7/30

U.S. Cl. 30—409 10 Claims



1. A tool for opening a can or the like, comprising a body part formed as an integral member and including a first portion extending in a first plane and a second portion extending in a second plane which is substantially transverse to said first plane, said first portion being elongated in a first direction and having a wall which bounds two cutouts spaced from one another in the direction of elongation and each having an outlet which opens at said second plane, each of said cutouts being bounded by a first wall section and a second wall section formed in said wall and spaced from one another in the direction of elongation, said second portion being also elongated in said first direction and having two pointed tips and two cutting edges which are located in said second plane, spaced from one another in the direction of elongation and face in opposite directions so that they can be utilized for opening by a left-handed person and a right-handed person, respectively, said second portion having two further wall sections which partially overlap and laterally limit the respective outlets of said cutouts of said first portion, so that when the body part is placed onto a bead of a can or the like and the bead is received in one of said cutouts, the first portion of said body part is supported on the bead from above by a respective one of said first wall sections, whereas a wall of the can or the like is firmly clamped between a respective one of said second wall sections of said first portion and a respective one of said further wall sections of said second portion of said body part, and when the second portion is forced into a cover of the can or the like said one second wall section of said first portion abuts against the bead from below.

4,380,124

DRAWING BOARD

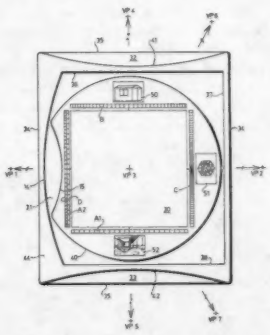
Joseph Smith, Auckland, New Zealand, assignor to Colin Ward Rogers, Auckland, New Zealand, a part interest

Filed Dec. 16, 1980, Ser. No. 217,183

Claims priority, application New Zealand, Jan. 22, 1980, 192655

Int. Cl.³ B43L 13/14

U.S. Cl. 33—433 9 Claims



1. A drawing board having a drawing surface and guide means for drawing instruments which guide means do not protrude above the plane of the drawing surface, said guide means including a pair of arcuate guide means of opposite curvature situated on one side of the board each arcuate guide means defining a different vanishing point with said vanishing points disposed on opposite sides of the center of the drawing surface, and a recess between the arcuate guide means to enable a drawing instrument positioned partly within said recess to be moved from one arcuate guide means to the other to enable lines to be drawn towards the different vanishing points on opposite sides of the center of the drawing surface, said arcuate guide means that is closest to the adjacent edge of the board being of larger radius, and being longer than the other said arcuate guide means.

4,380,125

METHOD OF AND APPARATUS FOR DRYING AND PREHEATING COKING COAL IN A FLIGHT STREAM TUBE

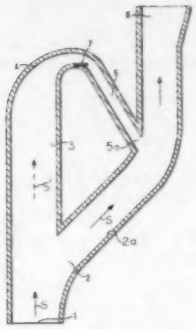
Diethard Habermehl; Wolfgang Rohde; Werner Kucharzyk, and Werner Siebert, all of Essen, Fed. Rep. of Germany, assignors to Bergwerksverband GmbH and Didier Engineerin GmbH, both of Essen, Fed. Rep. of Germany

Filed Oct. 23, 1980, Ser. No. 199,953

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1979, 2942878

Int. Cl.³ F26B *3/10, 17/10*

U.S. Cl. 34—10 12 Claims



1. Method of drying and preheating coking coal fines composed of mixed particle fractions in an upright flight stream tube, comprising the steps of advancing a stream composed of hot gas and mixed fractions of moist coal particles upwardly through a flight stream tube in a primary path; temporarily splitting said stream into a larger main stream containing the smaller particle fractions and a smaller secondary stream containing the coarser particle fractions; thereupon admitting the coarser particle fractions into the main stream with the smaller particle fractions in a directions generally opposite to the advancement of the main stream; and varying the volumetric quantity of said secondary stream to thereby vary the size composition of the coarser particle fractions contained therein.

4,380,126

HEAT RECYCLING APPARATUS

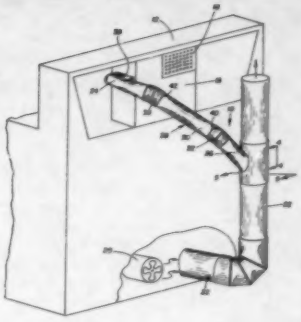
Horton C. Kinder, 2524 Springfield Ave., Fort Wayne, Ind. 46805

Filed Jun. 2, 1981, Ser. No. 269,726

Int. Cl.³ F26B *11/04*

U.S. Cl. 34—86 8 Claims

1. A heat recycling apparatus operatively connected to a hot air chamber having an exhaust pipe, said apparatus comprising: an intake conduit having opposite ends, one of said conduit ends having an opening surrounded by a peripheral edge, said exhaust pipe having an aperture therein, said one intake conduit end extending into said exhaust pipe through said aperture, said opening having an area of between approximately 30% and approximately 65% of the cross-sectional area of said exhaust pipe, said peripheral edge being disposed tangent to said exhaust pipe and in a plane perpendicular to the longitudinal axis of said exhaust pipe passing through the most upstream point of said aperture thereby minimizing dead air space at the junction of said intake conduit and said exhaust pipe; the other of said conduit ends being connected to said hot air chamber,



thereby providing recycled exhaust air to said hot air chamber without excessive lint accumulation.

4,380,127

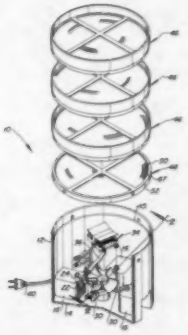
DEHYDRATOR APPARATUS WITH UNIDIRECTIONAL AIR FLOW CONTROL MEANS

Elliott D. Roberts, 105 W. Shore Dr., Richardson, Tex. 75080

Continuation-in-part of Ser. No. 77,900, Sep. 24, 1978. This application Feb. 27, 1981, Ser. No. 238,848

Int. Cl.³ F26B *9/00*

U.S. Cl. 34—197 17 Claims



1. Dehydrator apparatus for drying food comprising:

a housing including a vertical sidewall portion and a transverse base wall joined to said sidewall portion and forming an enclosure;

air intake means in said housing comprising a plurality of spaced apart recesses formed by respective wall portions of said housing projecting inwardly from said sidewall portion adjacent said base wall and forming air inlet flow channels into said housing through openings in respective walls of said recesses;

at least one food supporting tray member disposed across an open top part of said housing, said tray member having a foraminous food supporting portion forming a generally flat shelf;

a fan mounted in said housing generally above said openings and disposed for inducting a flow of air into said housing through said air intake means and then through said shelf; and

a motor mounted in said housing below and drivably con-

nected to said fan, said motor being mounted adjacent said openings in said recesses whereby air is drawn through said channels into said housing by said fan and flows generally over said motor before flowing through said shelf.

4,380,128

GREETING CARD WITH OPEN WORK ENGRAVING THEREON

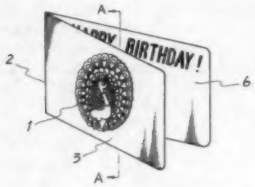
Junju Ichikawa, Mikageishi, Japan, assignor to Kagawa & Co., Ltd., Osaka, Japan

Filed Oct. 7, 1980, Ser. No. 194,884

Claims priority, application Japan, Oct. 12, 1979, 54-142033[U]

Int. Cl.³ G09F *1/00*

U.S. Cl. 40—158 R **3 Claims**



1. A greeting card comprising

a front sheet having a front face and a back sheet containing an inner face,

an aperture disposed in the front face,

a front flap portion attached to the inner surface of the front sheet, across said aperture, said front flap portion combining with the inside surface of the front sheet to form a pocket, and

a decorative element made of a metallic or synthetic material and having a specific see-through design, removably disposed in said pocket, whereby a desired background can be seen through said decorative, see-through design.

4,380,129

PROOF-OF-PURCHASE FOR SELF-OPENING CANS

Marshall J. Barrash, Atlanta, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.

Filed Sep. 9, 1981, Ser. No. 300,554

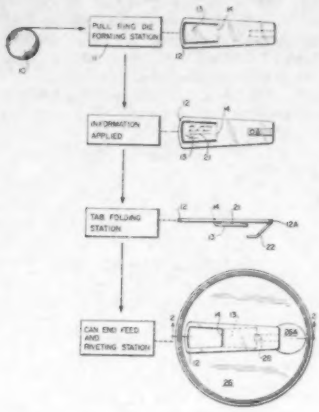
Int. Cl.³ G09F *3/00*

U.S. Cl. 40—307 **16 Claims**

1. A pull ring opening device for a self-opening can lid comprising:

a finger engaging portion;

a closure engaging portion for engaging closure means for said can; and



an integral removable portion comprising at least a surface adapted to display indicia.

4,380,130

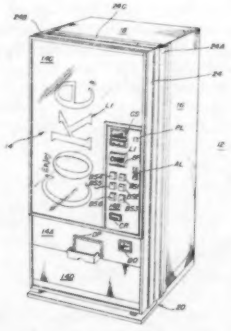
DISPLAY PANELS FOR VENDING MACHINES

G. Merle Bachmann, Stone Mountain; Charles L. Davis, and Annis R. Morgan, Jr., both of Atlanta, all of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Mar. 17, 1981, Ser. No. 244,818

Int. Cl.³ G09F *7/00*

U.S. Cl. 40—584 **1 Claim**



1. Display means for an obverse face of a vending machine comprising:

a plurality of panel means defining a like plurality of display fields within a defined display area;

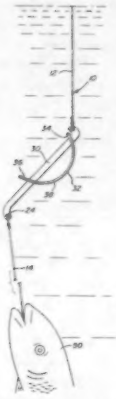
selected ones of said panel means being of contrasting surface characteristics to the remaining said panel means in the provision of selected display configurations in said display area;

one of said selected ones of said panel means including logo means definitive of a primary product to be dispensed by said vending machine; and

the remaining said selected ones of said panel means being so configured, in conjunction with said one of said selected panel means, as to suggest the representation by said display panel means of an alphanumeric character representative of the said primary product in addition to said logo

means, said alphanumeric character being an abbreviation for said primary product.

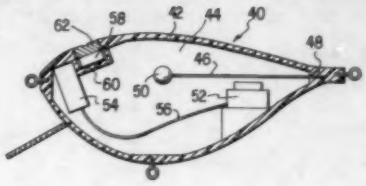
4,380,131
FISH LINE HOOK SETTING ATTACHMENT
Frank Lazan, Jr., Box 311, Cassville, W. Va. 26527
Filed Dec. 16, 1980, Ser. No. 216,849
Int. Cl.³ A01K *97/12*
U.S. Cl. 43—15 **7 Claims**



1. In combination with a fishing line assembly including a flexible base end portion for support from a support structure such as a fishing rod, a flexible free end portion from one end of which a hook assembly may be supported and an elongated intermediate portion extending between and connecting said end portions, said intermediate portion including means functioning to rigidify said intermediate portion, the opposite ends of said intermediate portion including oppositely inclined transverse water vane portions supported therefrom against rotation relative to said intermediate portion, whereby a downward pull on the free end portion of the fishing line assembly by a fish biting on the attached hook assembly sufficient to cause lengthwise downward displacement of the fishing line assembly against light buoyancy applied thereto by an associated bobber will cause said intermediate portion to be inclined relative to the direction of the pull and thus resist said pull at the free end portion of said fishing line assembly to thereby render the effect of an almost immediate pull on the free end portion of the fishing line assembly in a direction substantially opposite to the direction of the pull effected thereon by a fish.

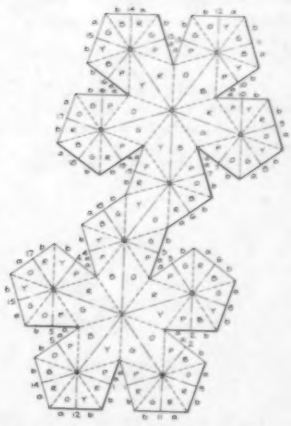
4,380,132
FISHING LURE WITH VIBRATION PRODUCING MEANS
James K. Atkinson, 504 Harrison St., Dardanelle, Ark. 72834
Filed Jun. 23, 1978, Ser. No. 918,405
Int. Cl.³ A01K *85/01*
U.S. Cl. 43—26.2 **4 Claims**

2. A fishing lure comprising:
a body member having walls defining a water-tight cavity;
a weight located within said cavity;
an electromagnetic transducer mounted within said cavity and coupled to said weight;
a power source; and



an oscillator circuit supplied by said power source and operable to drive said transducer at a predetermined frequency.

4,380,133
FLAT PATTERN FOR THREE-DIMENSIONAL RIGID STRUCTURE
Bennett R. Arnstein, 3049 W. 8th St., Apt. 435, Los Angeles, Calif. 90005
Filed Feb. 17, 1981, Ser. No. 235,012
Int. Cl.³ A63H *33/00*
U.S. Cl. 46—1 L **5 Claims**



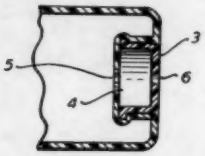
1. A flat pattern laid out on a thin flexible sheet of material that can be written or printed or painted or marked upon and that can be folded and creased to form a three-dimensional structure, consisting of twelve regular pentagons connected to form a flat pattern for a simple dodecahedron, each pentagon having diagonals bisecting the corner angles of said pentagons, crease lines lying along said diagonals, up-facing creases being directed toward the side edges of said pentagons, down-facing creases being directed toward the corners of said pentagons, whereby a great dodecahedron is formed when the side edges of said pentagons are joined.

4,380,134

MOLDED SQUEEZE TOY INCLUDING WHISTLE

Anthony P. Taluba, Box 245, R.D. 3, Lebanon, N.J. 08833, and Paul A. Taluba, 319A Rte. 1, Morrisville, N.Y. 12962

Continuation of Ser. No. 727,473, Sep. 28, 1976, abandoned. This application Jul. 10, 1978, Ser. No. 923,447
Int. Cl.[3] A63H *5/00*
U.S. Cl. 46—117 11 Claims



1. An air-filled squeeze toy of unvulcanized thermoplastic rubber material comprising in combination a whistle having a site comprising a whistle cavity integrally formed with the body of said toy in a blow molding process in which a parison extruded from a source for plasticizing said thermoplastic rubber is clamped in an unheated mold including precisely engineered apertured insert means in fixed relation to the interior of said mold,

said whistle cavity including a closure forming a substantially closed chamber resonant to a preselected sound frequency,

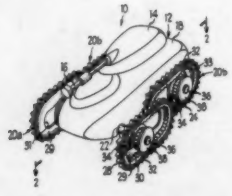
said whistle cavity and said closure each having a small central opening, said openings being substantially aligned in axial relation to said chamber, wherein at least the central opening in said whistle cavity as formed by said insert means is positioned to accommodate the excursions of a cylindrical blow pin of uniform cross-section, whereby it serves as a blow hole during said blow molding process, and wherein as a result thereof said opening in said whistle cavity is precisely controlled to have a uniform reproducible diameter precisely equalling the minimum diameter of the opening in said closure.

4,380,135

FOUR WHEEL DRIVE TOY

John R. Wildman, North Riverside, and Howard J. Morrison, Deerfield, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Aug. 10, 1981, Ser. No. 291,420
Int. Cl.[3] A63H *17/04*
U.S. Cl. 46—219 3 Claims



1. A four-wheel drive toy vehicle comprising:

a vehicle housing having a front and rear end;

two pairs of identical elongated movable track means for forwarding the vehicle housing over a surface, a first pair of track means near the front end on opposite sides of the housing and a second pair of track means near the rear end on opposite sides of the housing, each track means mounted for independent pivoting movement about a horizontal axis through a full 360°, each of said track means including a member having a pair of generally parallel spaced elongated run portions and end portions, one of said pair of track means being mounted further outwardly of the housing than the other pair, one pair of track means overlapping the other pair to provide a shortened profile for said vehicle, each of said track means defining an elongated central recess;

a symmetrical drive means for driving each of said pairs of track means at the same velocity;

follower means carried by said housing and driven by said drive means for movement along the recess of each of said track means at the same velocity, in proximity to said run portions and said end portions whereby the track means forms a base on which the follower means moves, said follower means including cooperating means providing for pivoting movement of said track means about said follower means as the latter reaches one of said end portions, said follower means further including gears driven by said drive means for rotation about a horizontal axis and adapted to roll about the interior of each recess;

a pair of axles arranged to transmit rotary motion from said drive means to said track means, said axles mounting said follower means, said axles spaced apart by a distance slightly greater than the length of the elongated run portions of said track means, one of said axles being shorter than the other; and

means for making the interior of said track means visible from the outside, said means for making the interior of the track means visible including a first flange for each track means, attached to each gear and engaging the exterior side of said track means for relative sliding movement along said track means as said follower means moves relative to said track means, said means for making the interior of said track means visible further including a set of second flanges, each second flange attached to an axle between said first flange and said vehicle housing, said second flange engaging the interior side of said track means for relative sliding movement along said track means as said follower means moves relative to said track means, each of said track means further including a radially inwardly directed flange arranged to abut with said second flange and to be sandwiched between said follower means and said second flange so as to securely and safely retain said track means on said follower means.

4,380,136

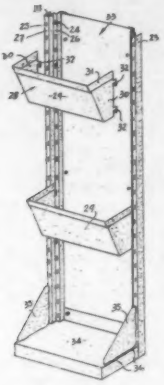
ASSEMBLY KIT FOR A HOLDER FOR GROWTH SUPPORTING MEDIUM

Ladislav S. Karpisek, 86 Woodfield Boulevarde, Caringbah, n.s.w, Australia

Filed Jul. 11, 1980, Ser. No. 167,725
Int. Cl.[3] A01G *9/02*
U.S. Cl. 47—83 5 Claims

1. A kit to assemble into at least one holder for a growth supporting medium such as soil, said kit comprising a backing member and two posts to be erected in vertical parallel spaced relationship against said backing member, first coupling means on each post spaced apart at regular intervals along the posts, at least one contoured front panel having an upper edge and a lower edge which is shorter than the upper edge, said front panel having a central portion disposed between two end portions, second coupling means on each of said end portions to respectively releasably engage with the first coupling means on the posts to position said end portions in planes at right angles to the plane of the backing member fixed to the cooperating post and to space said central portion from the backing member, said central portion and end portions of the front panel and the backing member providing encircling walls for a

soil zone which is open top and bottom and has a smaller cross-sectional area adjacent the front panel lower edge than it



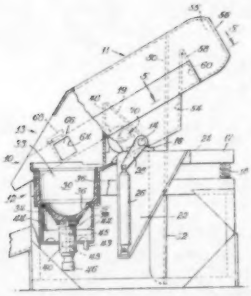
has adjacent the front panel upper edge and a bottom panel to close off the bottom of a selected soil zone.

4,380,137

SELF-SEPARATING FINISHING MACHINE HAVING VARIABLE DEGREES OF ROTATION AND VIBRATION, AND METHOD

Gunther W. Balz, Kalamazoo, Mich., assignor to Roto-Finish Company, Inc., Kalamazoo, Mich.

Filed May 18, 1981, Ser. No. 264,399
Int. Cl.³ B24B *31/00*
U.S. Cl. 51—163.1 **28 Claims**



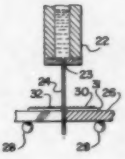
1. A finishing machine for finishing the surface of unfinished parts with finishing media comprising a housing which is rotatable about a substantially horizontal axis, a finishing chamber in said housing for receiving unfinished parts and finishing media and for finishing of parts when said housing is in a first and finishing position, a storage chamber in said housing adapted to receive finishing media from said finishing chamber when said housing is rotated to a position different from said first position, a foraminous member disposed in said housing for separating finishing media from parts, parts exit means adjacent said foraminous member for exit of finished parts from said machine when said housing is rotated to a position different from said first position, means for rotating said housing about a substantially horizontal axis from one position to another, and means for transfer of finishing media from said storage chamber to said finishing chamber upon return of said housing to said finishing position, characterized in that said housing is rotatable to a second and media-separation position and to a third and parts-ejection position, said positions being separate and independent positions and means for rotating said housing to each of said different positions for Media separation at said record portion and for parts—ejection at said separate third position.

4,380,138

ABRASIVE LIQUID JET CUTTING

Peter H. Hofer, Barrington, Ill., assignor to International Harvester Co., Chicago, Ill.

Filed Apr. 13, 1981, Ser. No. 253,440
Int. Cl.³ B24B *1/00*
U.S. Cl. 51—321 **31 Claims**



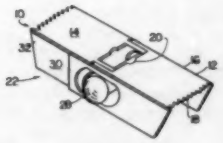
1. In a process of cutting a workpiece using a relatively thin, high velocity liquid jet directed through a nozzle opening, the improvement comprising the steps of interposing a plurality of stationary positionally supported abrasive particles between said nozzle opening and said workpiece, directing said liquid jet in an airborne stream toward said particles, intercepting said particles with said liquid jet, and driving said liquid jet and said particles into said workpiece.

4,380,139

ANCHORING APPARATUS

Ronald Mitchell, 4600 W. Second St., Roswell, N. Mex. 88201

Filed Sep. 15, 1980, Ser. No. 187,433
Int. Cl.³ E02D *5/74*
U.S. Cl. 52—162 **14 Claims**



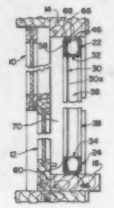
1. An anchoring apparatus comprising a pair of fluke members, each fluke member comprising a planar top plate and at least two support arms secured in a substantially perpendicular orientation to said top plate and extending longitudinally away from said top plate with their top sides being substantially parallel to said planar top, each said support arm defining a slot, pin means positioned in each said support arm slot, each said support arm being adapted to slide and rotate on said pin means so that the portion of the support arm extending away from the top plate abuts against the bottom of the top plate of the other fluke member, said pin means defining an eyelet with a threaded bore therethrough and tension means threadedly engaging said threaded eyelet adapted to keep said fluke member locked into abutting position.

4,380,140

THERMAL BARRIER FOR WINDOWS

Joseph L. Abbott, Columbia, S.C.

Filed Sep. 25, 1980, Ser. No. 190,796
Int. Cl.³ E04B 3/26
U.S. Cl. 52—202 **10 Claims**



1. A thermal barrier for a window in a window opening including means providing spaced apart pairs of horizontal and vertical surfaces extending about the window opening comprising, a channel member mountable on each said surface and having a bottom wall transverse to said window and a pair of spaced apart side walls extending inwardly from said bottom wall parallel to said window, a sheet of rigid plastic film material having opposite sides and spaced apart pairs of planar horizontal and vertical edges each received in a corresponding one of said channel members between said side walls thereof and parallel to said window, the upper one of said pair of horizontally extending edges including rigid flange means extending at an angle with respect to one of said opposite sides of said sheet, a retaining member removably received in each channel member and including a leg frictionally engaging the corresponding edge of said sheet against one of the side walls of the corresponding channel member and in the direction toward the bottom wall of the channel member, said lower one of said pair of horizontally extending edges and said pair of vertical edges each terminating adjacent the juncture between said one side wall and the bottom wall of said corresponding channel member, said leg of the retaining member in the channel member receiving said upper one of said pair of horizontally extending edges of said sheet engaging said flange means in the direction toward the bottom wall of the corresponding channel member.

4,380,142

AGRICULTURAL MACHINE FOR THE TEDDING OR CONDITIONING OF FODDER

Albert Wattron, Schwenheim, and Michel Quirin, Allenwiller, both of France, assignors to Belrecolt S.A., Marmoutier, France

Filed Dec. 12, 1980, Ser. No. 215,854
Claims priority, application France, Dec. 20, 1979, 79 31888
Int. Cl.³ A01D 49/00
U.S. Cl. 56—370 **4 Claims**

1. In a machine for handling cut herbage during forward movement of the machine on the ground,

in combination:

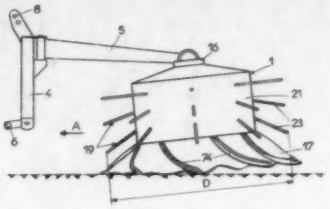
a support,

at least one drum mounted on said support for rotation about an axis which is inclined upwardly and forwardly in respect of the direction of movement of the machine,

driving means operable for rotating said drum about said axis,

a flexible deformable skirt mounted on the lower portion of said drum for joint rotation therewith and operative for lifting the cut herbage and moving it rearwardly,

tedding means cooperating with said skirt for tedding the lifted herbage prior to its deposition on the ground, wherein said drum is hollow, and



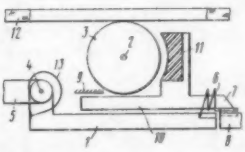
a mounting support situated within said hollow drum, and wherein said tedding means includes impelling means affixed to said mounting support.

4,380,143

DEVICE FOR WITHDRAWING ROTOR OF SPINDLELESS SPINNING MACHINE TO INOPERATIVE POSITION

Abdurakhim Abduganiev, Chilanzar, kvartal 20, 33, kv. 7; Valentin N. Tikhonov, ulitsa Sh. Rustaveli, 55, kv. 28; Gennady N. Shlykov, Chilanzar, kvartal 19, 31, kv. 3; Vitaly I. Zhestkov, Chilanzar, kvartal 19, 26, kv. 41, all of Tashkent; Timur P. Krjuk, prospekt Mira, 90, kv. 11, Moscow; Viktor M. Mukhin, ulitsa Bogdana Khmelnitskogo, 69, korpus 2, kv. 31, Tashkent, and Jury N. Tikhonov, ulitsa Mukimi, 1, kv. 62, Tashkent, all of U.S.S.R.

PCT No. PCT/SU79/00011, § 371 Date Oct. 27, 1980, § 102(e) Date Oct. 22, 1980, PCT Pub. No. WO80/01815, PCT Pub. Date Sep. 4, 1980
PCT Filed Feb. 27, 1979, Ser. No. 197,996
Int. Cl.³ D01H 7/22, 1/12
U.S. Cl. 57—89 **8 Claims**



1. Apparatus for withdrawing a rotor of a spindleless spinning machine to an inoperative position and for braking the rotation of the rotor, comprising:

a housing in which a rotor is mounted and bearings for rotation about an axis of rotation;

cylindrical pivot means for pivotally mounting said housing to a framework of the spinning machine such that said housing is pivotable about an axis which is substantially parallel to the axis of rotation of said rotor between a first position wherein said rotor mounted in said housing is in an operative position and a second position wherein said rotor is in an inoperative position; and

a slide member mounted on said housing for translatory reciprocating movement thereon in a direction substantially normal to the axis of rotation of said rotor, said slide member having at least one brake shoe secured thereto adapted to selectively interact with said rotor at a point within the sliding travel of said slide member on said housing, and latch means provided on said slide member adapted to releasably engage the framework of the spinning machine when said housing is in said first position;

whereby in order to withdraw said rotor to the inoperative position and brake its rotation, said latch is slidably moved

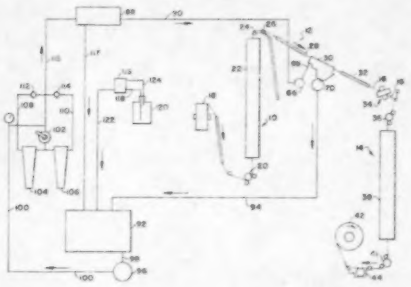
to a position such that it is disengaged from the framework of the spinning machine, such movement being transmitted to said slide member which translates on said housing whereupon said brake shoe comes into contact with said rotor to terminate its rotation.

4,380,144

BELT FALSE TWISTING SYSTEM

William J. Henry, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Aug. 3, 1981, Ser. No. 289,163
Int. Cl.³ D02G 1/02; D01H 13/30
U.S. Cl. 57—286 **2 Claims**



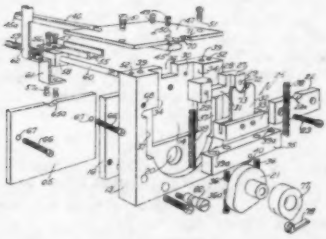
1. A false twist crimping machine comprising: a primary heater, means to supply a yarn to said primary heater, a cooling bath, means to guide the yarn from said primary heater to said cooling bath, a belt false twisting mechanism, means to supply the yarn to said false twisting mechanism, means to take-up the yarn false twisted from said mechanism, means to supply a cooling liquid to said cooling bath and means operably associated with said cooling bath to purify and recirculate cooling water from said cooling bath to said means to supply a cooling liquid.

4,380,145

WIRE LINK-FORMING AND LINKING DEVICE

Robert A. Morin, 49 Mulberry Cir., Johnston, R.I. 02919

Continuation-in-part of Ser. No. 65,941, Aug. 13, 1979, abandoned. This application Feb. 20, 1981, Ser. No. 236,620
Int. Cl.³ B21L 1/04
U.S. Cl. 59—27 **6 Claims**



1. A machine for closing open end links comprising a magazine having means for guiding the open end links; a slideway intersecting the path of said link guiding means;

a fixed semi-circularly shaped link center forming tool across said slideway on one side of the path of said link guiding means;

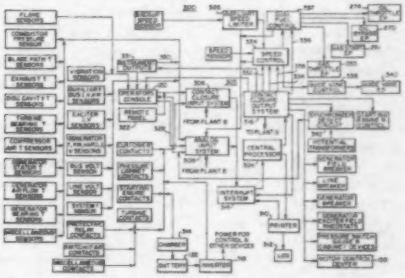
a single one-piece slide tool in said slideway on the other side of the path of said link guiding means having an irregularly-shaped groove having an upper arcuate portion mating with said link and supporting the link at spaced points at least for initial movement to the forming tool and a lower arcuate portion, the juncture of said portions defining spaced link contacting points whereby, when an open end curved link having a concave inner surface is moved into the path of said slideway and engaged by said upper arcuate spaced points of said slide tool and moved toward said center forming tool, its inner surface will first engage said center forming tool and further movement in the same direction of said slide tool with both arcuate portions will cause said spaced link contacting points to bend the link on either side of the center thereof about said center forming tool moving the link out of said upper arcuate portion and without interruption of bending into the lower arcuate portion to close the open ends of the link.

4,380,146

SYSTEM AND METHOD FOR ACCELERATING AND SEQUENCING INDUSTRIAL GAS TURBINE APPARATUS AND GAS TURBINE ELECTRIC POWER PLANTS PREFERABLY WITH A DIGITAL COMPUTER CONTROL SYSTEM

Robert A. Yannone, Aldan, and Roy W. Kiscaden, Springfield, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 758,532, Jan. 12, 1977, abandoned, which is a continuation of Ser. No. 252,131, May 10, 1972, abandoned. This application Nov. 16, 1979, Ser. No. 95,174
Int. Cl.³ F02C 7/26
U.S. Cl. 60—39.141 **12 Claims**

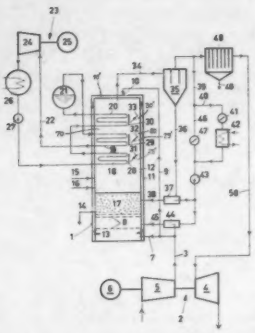


1. A gas turbine electric power plant comprising a gas turbine having compressor combustion and turbine elements, a generator coupled to said gas turbine for drive power, a fuel system for supplying fuel to said gas turbine combustion element, means for operating said fuel system to energize said turbine, electronic means for controlling said fuel system operating means including electronic means for generating a speed reference, and electronic means for controlling said operating means to control the fuel flow in response to the speed reference and actual turbine speed normally to accelerate said turbine to operating speed from a predetermined lower speed in a substantially fixed period of time irrespectively of the existing ambient temperature over an ambient temperature range at least from −40° F. to 120° F.

4,380,147
STEAM POWER PLANT CONTAINING PRESSURE-FIRED STEAM GENERATOR WITH FLUIDIZED BED FIRING

Tadeusz Zaba, Ennetbaden, Switzerland, assignor to BBC Brown, Boveri & Co. Ltd., Baden, Switzerland

Filed Mar. 18, 1981, Ser. No. 245,075
Claims priority, application European Pat. Off., Apr. 16, 1980, 80200338.4
Int. Cl.³ F02C 6/18
U.S. Cl. 60—39.182 1 Claim



1. In a steam power plant containing a pressure-fired steam generator equipped with fluidized bed firing, a charging set composed of a gas turbine and a compressor, the charging set being driven by the flue gases of the steam generator and conveying the compressed combustion air beneath the fluidized bed in order to form thereat a vortex layer, devices for the separation, filtering and withdrawal of the dust-like contaminants contained in the flue gas and for controlling and regulating the steam output for a steam turbo-generator set, the improvement which comprises:

said steam generator containing boiler heating surfaces;

all of said boiler heating surfaces being arranged externally of the vortex layer of the fluidized bed;

said devices for the control and regulation of the steam output comprising:

by-pass flow regulating valve means for the flue gas;

said by-pass flow regulating valve means being arranged in said steam generator;

a flue gas withdrawal line provided for said steam generator;

a flue gas by-pass line means branching-off said flue gas withdrawal line;

said flue gas by-pass line means containing a flue gas by-pass valve means, a flue gas cooler means and a ventilator means;

said flue gas by-pass line means opening into the steam generator below the fluidized bed;

a secondary flue gas by-pass line for flow communicating a location of the flue gas by-pass line means forwardly of the flue gas by-pass valve means with a location of the flue gas by-pass line means following the flue gas cooler means;

a secondary flue gas by-pass valve means provided for said secondary flue gas by-pass line;

an injector for blowing in solid non-combusted constituents separated out of the flue gas withdrawal line into the fluidized bed;

a flue gas branch means leading frm the flue gas by-pass line means following the ventilator into said injector;

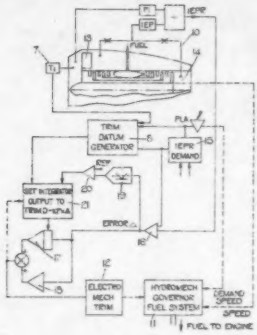
a flue gas/air mixer provided for the flue gas by-pass line means forwardly of a location where it opens below the fluidized bed of the steam generator; and

said flue gas/air mixer flow communicating with a branched location leading from a primary air line of said charging set.

4,380,148
DEVICE FOR ADJUSTING GAS TURBINE ENGINE FUEL CONTROL SYSTEM IN ACCORDANCE WITH ENGINE PARAMETER

Robert G. Burrage, and Michael J. Joby, both of Solihull, England, assignors to Lucas Industries Limited, Birmingham, England

Filed Sep. 19, 1980, Ser. No. 188,727
Claims priority, application United Kingdom, Sep. 21, 1979, 7932878
Int. Cl.³ F02C 9/28
U.S. Cl. 60—39.281 4 Claims



1. A fuel control system for a gas turbine engine of the kind including a hydromechanical speed governor fuel control in which a fuel valve is movable under the influence of a control input element, operable for example by the pilot of an aircraft in which the engine is installed, and speed sensing means, the effect of said control input element on said fuel valve being variable through the intermediary of an electromechanical trim device controlled by an electronic control circuit sensitive to at least one engine parameter, wherein said electronic control circuit includes error signal generating means for producing an error signal representing the difference between the desired and actual values of said engine parameter, a proportional-plus-integral controller circuit for producing the output signal which is applied to said electromechanical trim device, means for generating a trim datum signal dependent on the control input and means for setting the integrator included in the proportional-plus-integral control circuit to a value corresponding to the difference between the trim datum signal and the output of the proportional part of the proportional-plus-integral control circuit when the magnitude of a function of the error signal exceeds a predetermined value.

4,380,149
METHOD AND MEANS FOR DIESEL EXHAUST PARTICULATE EMISSION CONTROL

Otto A. Ludecke, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

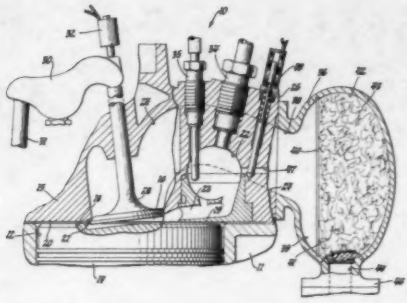
Filed Feb. 9, 1981, Ser. No. 232,320
Int. Cl.³ F01N 3/18
U.S. Cl. 60—274 5 Claims

1. A process for limiting emissions of combustible particulates with the exhaust gases from a compression ignition engine of the type wherein excess air is present in the combustion chambers and exhaust gases, at least under conditions other than high load, and in which pressurized fuel-air mixtures are burned and the cylinder gases are expanded to a predetermined cylinder volume which develops substantial mechanical work

prior to venting the cylinder gases to exhaust, said process comprising the steps of

filtering the exhaust gases to collect combustible particulates in a filter capable of withstanding temperatures adequate to incinerate the collected particulates in the excess air containing exhaust gases, and

occasionally, at extended intervals of engine operation, igniting and burning particulates collected in the filter by selectively venting burning pressurized mixture from at



least one cylinder directly to said filter prior to the completion of burning and expansion in the cylinder to said predetermined volume, the mass of said burning mixture which is selectively vented being sufficient to raise to their combustion temperature the particulates in at least a selected portion of said filter,

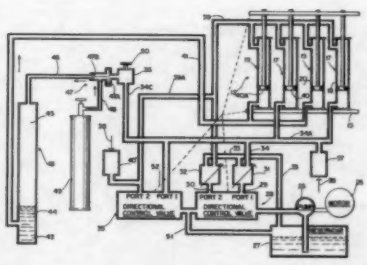
whereby there results ignition and burning of the collected particulates supported by the excess air containing engine exhaust gases passed through the filter.

4,380,150

PUMP JACK ASSEMBLY FOR WELLS

John C. Carlson, General Delivery, Salmon Arm, British Columbia, Canada (V0E 2T0)

Filed Feb. 7, 1980, Ser. No. 119,378
Claims priority, application Canada, Feb. 22, 1979, 322062
Int. Cl.³ F15B *1/02, 13/02*
U.S. Cl. 60—372 **12 Claims**



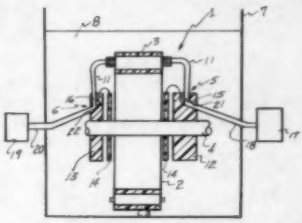
1. In a pump jack assembly for wells which include a polish rod operating a pump within the well and a source of hydraulic fluid under pressure including a fluid reservoir; the improvement comprising in combination a separate pump actuating assembly having a lift stroke and a return stroke and including at least one fluid operator operatively connected to the polish rod, and a separate counter balance assembly including at least one fluid operator, also operatively connected to the polish rod, said fluid operators including a lift side and a return side, means operatively connecting the source of hydraulic fluid under pressure, to the lift side of said fluid operator of said pump actuating assembly when said pump actuating assembly is on the lift stroke, and to the return side of said fluid operators of said pump actuating assembly and said counter balance assembly when said pump actuating assembly is on the return stroke, said connecting means being responsive to the position of said pump actuating assembly to effect a cycling operation of said pump jack assembly, and a fluid source having means to adjust the pressure thereof and being operatively connected to the lift side of the fluid operator of said counter balance assembly, said fluid source having adjustable pressure including an accumulator having a liquid in the lower portion thereof and gas under pressure in the upper portion thereof, said liquid being operatively connected to the lift side of the fluid operator of said counter balance assembly, a source of high pressure gas, a one-way high-to-low pressure regulator valve between said source and the upper portion of said last mentioned accumulator, and adjustable means operatively connected to the hydraulic pressure acting on the lift side of the fluid operator of said pump actuating assembly and said regulating valve for operating said regulating valve.

4,380,151

BUOYANCY GENERATOR DEVICE AND METHODS OF MAKING AND USING THE SAME

Thomas C. Miller, 216 Antire Rd., High Ridge, Mo. 63049

Filed Nov. 17, 1980, Ser. No. 207,293
Int. Cl.³ F03C *00/00*
U.S. Cl. 60—496 **1 Claim**



1. A buoyancy generator comprising an energy conversion device for converting stored liquids and potential energy into rotational and kinetic energy comprising,

wheel means, rotatably mounted and submerged in a body of liquid,

closed rigid storage chambers operably mounted in said wheel means and disposed about the periphery thereof,

downward motion assistance means comprising fluid insertion means operably mounted proximate the uppermost part of said wheel means and adapted to fill each chamber with fluid as it reaches its highest point of travel,

upward motion assistance means comprising fluid extracting and air injection means operably mounted proximate the lowermost part of said wheel means and adapted to empty each chamber of fluid as it reaches its lowest point of travel and thereby increase each chamber's buoyancy.

4,380,152

DIAPHRAGM DISPLACER STIRLING ENGINE POWERED ALTERNATOR-COMPRESSOR

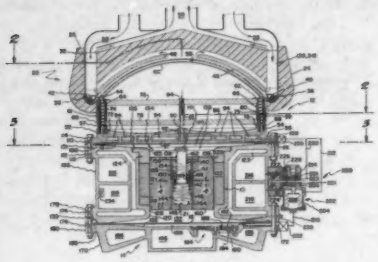
Lawrence R. Folsom, Schenectady, N.Y.; John J. Dineen, Durham, N.H.; Nicholas G. Vitale, Schenectady, N.Y., and Charles B. Balas, Jr., Denville, N.J., assignors to Mechanical Technology Incorporated, Latham, N.Y.

Filed Jul. 25, 1980, Ser. No. 172,373
Int. Cl.³ F02G *1/04*
U.S. Cl. 60—520 **19 Claims**

1. A Stirling engine having a vessel containing a working fluid and having a hot chamber; a cold chamber; a displacer having a hot end facing said hot chamber and a cold end facing

said cold chamber, said displacer arranged for oscillation between the hot and cold chambers; and a fluid actuated work output member; wherein the improvement comprises:

unitary means contained entirely within said vessel and coupled between said displacer and stationary structure fixed within said vessel for reducing the effective area of



said displacer cold face relative to the effective area of said displacer hot face, and for storing energy upon movement of said displacer toward one end to drive said displacer back toward the other end, and

wherein said unitary means includes a diaphragm having an inner portion connected to said stationary structure, and an outer portion connected to said displacer.

4,380,153

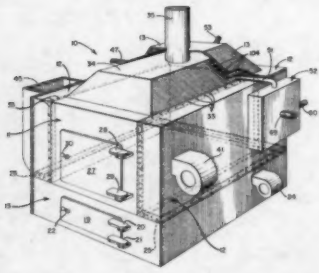
TOTAL ENERGY HEATING UNIT

Henry G. Ursillo, 306 Ipswich Rd., Boxford, Mass. 01921

Filed Oct. 24, 1980, Ser. No. 200,155

Int. Cl.³ F01K *17/00*

U.S. Cl. 60—648 **21 Claims**



1. Process for providing hot air for heating, hot water, and electricity from a single source of fuel comprising the following steps:

(a) burning a suitable fuel within a closed system for the generation of heat;

(b) providing forging air as needed to generate and to maintain said heat;

(c) introducing water under pressure into a closed tank heated by said heat generated, for the generation of steam;

(d) operating a steam turbine operatively connected to an electrical generator, by the steam generated;

(e) passing air around said closed system whereby said air is heated and subsequently forced into a distribution system; and

(f) circulating water around a portion of said closed system whereby the heat from the system generated is additionally used to heat the water.

4,380,154

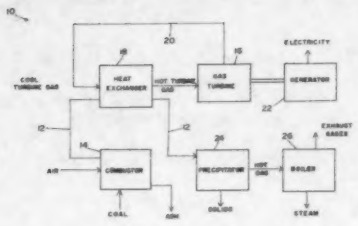
CLEAN COAL POWER SYSTEM

George Y. Eastman, Lancaster, Pa., assignor to Thermacore, Inc., Lancaster, Pa.

Filed Jun. 23, 1981, Ser. No. 276,655

Int. Cl.³ F02C *1/10*

U.S. Cl. 60—682 **13 Claims**



1. An apparatus for the production of mechanical power comprising:

a fluidized bed combustor into which air, coal and limestone are introduced and in which the coal is burned to create heat and the limestone chemically combines with any sulphur in the coal to produce solid compounds;

means attached to the combustor to remove the solid compounds produced by combination of the limestone and sulphur;

a closed cycle gas turbine using hot gas furnished to its input to create mechanical energy; and

a heat exchanger, a first part of which is connected to the fluidized bed combustor and a second part of which is attached to the gas turbine input, heating the turbine gas prior to entry into the turbine, comprising multiple heat pipes constructed with casings with a coating of a continuous impermeable layer of oxide of approximately one micron thickness and a second ceramic coating of between 0.010 and 0.125 inch thickness, covering at least that portion of the heat pipes immersed in the fluidized bed.

4,380,155

TEMPERATURE SENSING CIRCUIT WITH HIGH NOISE IMMUNITY

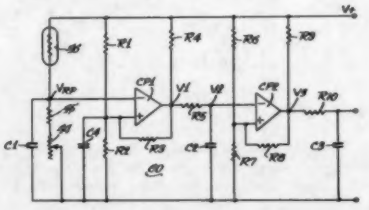
Stephen W. Paddock, Evansville, and Andrew T. Tershak, Centre Township, Vanderburgh County, both of Ind., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Division of Ser. No. 68,473, Aug. 20, 1979, Pat. No. 4,297,851.

This application Feb. 26, 1981, Ser. No. 238,521

Int. Cl.³ F25B *1/00*; G01K *7/02*

U.S. Cl. 62—229 **5 Claims**



1. In a refrigerator system having refrigeration apparatus for cooling a refrigerated compartment, a temperature sensing circuit with improved immunity to noise occurring in the refrigerator system, comprising:

a circuit board for the temperature sensing circuit located within the refrigerated compartment;

an analog temperature sensing device mounted in the refrigerated compartment and connected to the circuit board for coupling a low level analog sensing signal to the temperature sensing circuit; and

a trigger circuit on the circuit board for generating a digital output as the temperature sensed by the analog device varies above or below a set point including an adjustable potentiometer mounted on the circuit board for manual adjustment of a set point, the potentiometer being connected in a voltage divider network with the analog temperature sensing device, and wherein the trigger circuit further includes a pair of cascaded comparator stages with the first stage coupled to the voltage divider network and having substantially no hysteresis in its response and the second comparision stage having substantial hysteresis in its response to produce the digital output.

4,380,156

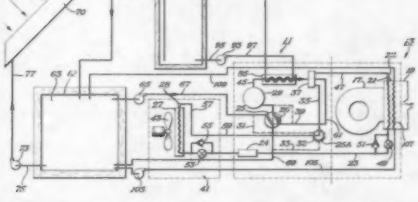
MULTIPLE SOURCE HEAT PUMP

Amir L. Ecker, Duncanville, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 125,503, Feb. 28, 1980, abandoned, Ser. No. 50,548, Jun. 21, 1979, and Ser. No. 45,392, Jun. 4, 1979. This application Dec. 11, 1981, Ser. No. 330,005

Int. Cl.³ F25B *29/00*

U.S. Cl. 62—235.1 **9 Claims**



1. Apparatus for conditioning a fluid temperaturewise comprising:

a. a fluid handler and fluid path means for circulating said fluid in a path in heat exchange relationship with a refrigerant fluid;

b. at least three refrigerant heat exchangers; a first of the heat exchangers having parallel-connected and alternatively operable first throttling means for throttling refrigerant flow and a first by-pass therefor, said first heat exchanger being disposed in the path of the fluid such that the fluid is passed in heat exchange relationship with said first heat exchanger when said fluid handler is operative, a second of the refrigerant heat exchangers having a liquid level controller controlling a throttling means upstream of said heat exchanger to prevent flooding thereof and being disposed in a heat exchange fluid circuit for circulating the refrigerant in heat exchange relationship with a heat exchange fluid, and a third of the heat exchangers having parallel-connected and alternatively operable second throttling means for throttling the refrigerant flow and second by-pass therefor, said third heat exchanger being disposed in a path of ambient air for circulating said refrigerant in heat exchange relationship with the ambient air;

c. a compressor connected into a refrigerant circuit for efficiently compressing the refrigerant from its inlet pressure to its discharge pressure under conditions of operation of the refrigerant circuit;

d. ambient air blower for circulating said ambient air in heat exchange relationship with the refrigerant in said third heat exchanger;

e. a refrigerant circuit serially connecting said at least three heat exchangers and said compressor and defining a flow path for said refrigerant;

f. means including a reversing valve for selecting the heat exchangers and direction of flow of refrigerant therethrough for selecting a particular mode of operation of the apparatus;

g. refrigerant disposed in said refrigerant circuit and adapted to be circulated in a selected flow path for transferring heat at a coefficient of performance greater than one;

h. a source of heat exchange fluid;

i. heat exchange fluid circulating means for circulating said heat exchange fluid in a heat exchange circuit and in heat exchange relationship with said refrigerant;

j. a heat exchange circuit serially connecting said heat exchange fluid source, circulating means and second heat exchanger;

k. control means for controlling respective modes of operation;

the element a-j being connected together in respective circuits and with said control means so as to be operable in at least the following modes, one operational cycle being indicated in each mode interconnection:

l. air to fluid heating in which said elements are connected serially compressor to reversing valve to first heat exchanger, with said first by-pass operative and with said fluid handler operative, to second throttling means to third heat exchanger, with said second throttling means controlling the liquid level in said third heat exchanger and with said ambient air blower operative, to second heat exchanger back to compressor;

m. heat exchange fluid to fluid heating in which said elements are connected serially compressor to reversing valve to first heat exchanger, with said first by-pass operative and with said fluid handler operative, to second throttling means to third heat exchanger, operating in flooded condition with said ambient air blower deenergized to second heat exchanger, with said liquid level controlling said second throttling means and with said heat exchange fluid circulating means operative to circulate said heat exchange fluid through said second heat exchanger and effect a low compression pressure ratio across said compressor, back to said compressor;

n. air and heat exchange fluid to fluid heating in which said elements are connected serially compressor to reversing valve to first heat exchanger with said first by-pass operative and with said fluid handler operative, to second throttling means to third heat exchanger, with said second throttling means controlling the liquid level of refrigerant therein and with said ambient air blower operative, to second heat exchanger with said heat exchange fluid circulating means operative to circulate said heat exchange fluid through said second heat exchanger and effect a low compression pressure ratio across said compressor and with said liquid level control imposing safety control on said second throttling means to prevent flooding of said second heat exchanger, back to said compressor; and

o. air to fluid cooling in which said elements are connected compressor to reversing valve to third heat exchanger, with second by-pass operative, to first throttling means to first heat exchanger, with first throttling means operative to control liquid level in said first heat exchanger and with fluid handler operative, to second heat exchanger back to compressor.

4,380,157

SELF-CHILLING DISPENSER FOR DRINKING FLUIDS

Peter Christiani, 333 First St., Apt. D-303, Seal Beach, Calif. 90740

Filed Jul. 8, 1981, Ser. No. 281,366
Int. Cl.³ F28C 1/00
U.S. Cl. 62—315 **1 Claim**

1. A self-chilling dispensing container for potable fluids comprising:

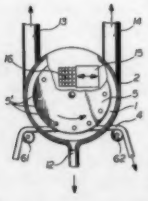
a wall of porous material, said wall having an interior wall surface defining a cavity and an upper mouth opening for receiving a potable liquid, and an exterior wall surface immersible in a coolant fluid such that said coolant fluid is absorbed and retained within said wall and thereafter may be allowed to evaporate to thus chill said potable liquid, there being a lip surface connecting said interior wall surface and said exterior wall surface to define a rim about said mouth, and a nonporous layer substantially insoluble in either fluid fully lining said interior wall surface and integral therewith forming an impermeable boundary between said potable liquid and said coolant fluid whereby the former is not contaminated by the latter, said nonporous layer extending uninterruptedly from said inner surface outwardly over said lip surface to further prevent said potable liquid from intermixing with said coolant fluid during decanting of said potable fluid from said container.

4,380,158

DEVICE FOR SPACE-DYEING TEXTILE FILAMENTS

Karl Bous, Wuppertal, Fed. Rep. of Germany, assignor to Hacoba Textilmaschinen GmbH & Co. KG, Wuppertal, Fed. Rep. of Germany

Filed Oct. 7, 1980, Ser. No. 194,896
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1979, 2940774
Int. Cl.³ D06B 1/02
U.S. Cl. 68—205 R **10 Claims**



1. A device for intermittently dyeing filamentary material, comprising:

a spray nozzle connected to a supply of liquid dyestuff under pressure;

transport means for continuously conveying a filament along a predetermined path past said nozzle; and

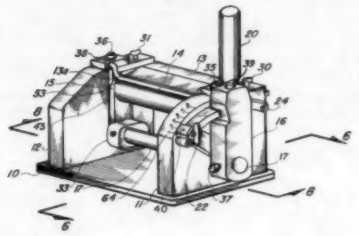
shutter means interposed between said nozzle and said path for chopping a jet of dyestuff trained upon the latter by said nozzle, said shutter means including a dished wheel with radially projecting, peripherally spaced sectoral vanes mounted on a shaft for rotation about an axis thereof, said wheel having a concave side partly surrounding said nozzle.

4,380,159

LEATHER SPLITTING MACHINE

John Michalik, 619 Mountain View, La Habra, Calif. 90631

Filed Apr. 20, 1981, Ser. No. 255,474
Int. Cl.³ C14B 1/14
U.S. Cl. 69—12 **1 Claim**



1. An adjustable leather splitting machine that incorporates in combination:

a base attached to to metal plates at a 90° angle to the base to which is attached:

a support roller, and

a guide roller with ball bearings on either end, running in channels for preselected adjustment of the thickness of leather to be split;

a knife adjustable for wear and lubrication;

a adjustable guide rod to assist in holding the leather against the roller;

at one side of the metal plates is an adjustment arm that controls the opening between the roller and knife edge according to premarked numbers on an articulate guide for the thickness of leather desired;

a scale along the side of the machine next to the arm;

two cams on the support roller which are rotated by the arm and engage two flat connecting rods that raise and lower the roller as directed by the arm;

the two cams are adjustable by set screws on top of each cam for perfect parallelism between roller and knife;

the arm is resettable by set screws to zero on the scale after wear of long use or repair;

the guide rod is adjustable for the distance between the knife edge on to of the two plates and the pressure against the roller by the plate on the opposite side of the arm; and

the thickness selector stop uses the same arms and cams as the roller and a support rod to center the axis to avoid wabbling.

4,380,160

TRAILER TOW LOCKING DEVICE

William F. Hoffman, 17 Brook Dr., Hope Valley, R.I. 02832

Filed Jan. 26, 1981, Ser. No. 228,067
Int. Cl.³ E05B 73/00, 67/38
U.S. Cl. 70—14 **5 Claims**

1. Apparatus for deterring theft of trailers which utilize a tow ring having a central opening and upper and lower annular surfaces comprising:

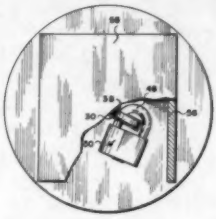
a base plate having an upper surface;

an upstanding tongue integral with said base plate and in-

cluding a free end distant from said base plate, said tongue adapted for reception through the central opening of the tow ring when said upper surface of said base plate is positioned proximate to the lower annular surface of the tow ring;

a top plate having upper and lower surfaces and an aperture therethrough for slideably receiving said tongue when said lower surface of said top plate is positioned proximate to the upper annular surface of the tow ring;

said apparatus being in the operational position when said upper surface of said base plate is positioned proximate to



the lower annular surface of the tow ring and said lower surface of said top plate is positioned proximate to the upper annular surface of the tow ring and said tongue extends through the aperture in said top plate; and

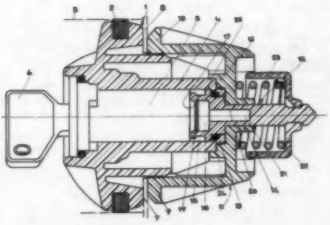
a cover member having spaced apart flanges fixed to said upper surface of said top plate and upstanding therefrom and a web portion integral with said flanges and spaced from said upper surface of said top plate; said tongue having a hole therethrough at a location intermediate said free end and said upper surface of said top plate adapted to receive the shank of a locking device when said apparatus assumes the operational position.

4,380,161

PLUG WITH A SAFETY LOCK FOR FILLERS OF FUEL RESERVOIRS OF AUTOMOTIVE VEHICLES

Alberto Bassi, Turin, Italy, assignor to ITW Fastex Italia S.p.A., Turin, Italy

Filed Nov. 24, 1980, Ser. No. 209,453
Claims priority, application Italy, Dec. 18, 1979, 28098 A/79
Int. Cl.³ B65D *55/14*; E05B *9/08*
U.S. Cl. 70—168 **5 Claims**



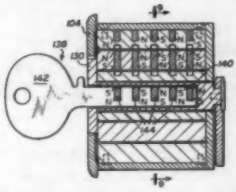
1. A closure plug for closing the end of a filler tube for a container comprising a plug means and a locking means, said plug means including cap means having a peripheral seal for engaging and sealing within the filler tube, a centrally disposed bore in said cap means, a rotatably received shank means received within and extending from the bottom end of said bore, latch means circumferentially disposed relative to the end of said bore engaged by and movable in response to rotative movement of said shank means said locking means including a key actuatable lock, a depending portion having a locking groove means therein, and an axially extending drive means, cooperating means within said bore adapted to engage said groove means and thereby secure said locking means within said bore, said shank means further including complimentary means for engagement by said drive means; whereby said plug means is insertable in a filler neck and secured therein by a tool, and said locking means may thereafter be inserted into the bore and non-removably secured therein thereby rendering said closure plug operable and lockable.

4,380,162

MAGNETIC LOCK

Joseph W. Woolfson, 10 Montaque Ter., Brooklyn, N.Y. 11201

Continuation-in-part of Ser. No. 539,285, Jan. 8, 1975, abandoned. This application Dec. 5, 1975, Ser. No. 637,961
Int. Cl.³ E05B *47/00, 19/26*
U.S. Cl. 70—276 **36 Claims**



1. A magnetic lock for operation by a key having a plurality of spaced apart magnets of different field strengths, said lock comprising:

a stator and a movable part, said stator having two spaced apart portions on opposite sides of said movable part to define two spaced apart shear planes, said movable part being movable to and from a locked position;

both stator portions having a like plurality of recesses in their respective surfaces that confront said movable part, said recesses being in alignment and being alignable with the key magnets;

said movable part having a like plurality of spaced apart through holes in alignment with said cavities when said movable part is in said locked position for rendering said through holes alignable with said key magnets;

a like plurality of pin tumbler magnets slidably disposed in said through holes, said pin tumbler magnets being of no greater longitudinal extent than said through holes; and

a like plurality of means, one for each pin tumbler magnet, for biasing each of said pin tumbler magnets toward one of said stator portions, at least two of said pin tumbler biasing means exerting different biasing forces on said pin tumbler magnets, whereby when said key is juxtaposed adjacent to said one stator portion and said key magnets are registered with said pin tumbler magnets and of effective field strength and polarity to repel said pin tumbler magnets with a force equal to the different biasing forces on said pin tumbler magnets, said pin tumbler magnets will be out of both said shear planes to unlock said lock.

4,380,163

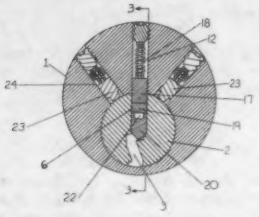
TAMPER-RESISTANT LOCK

Kenneth J. Reder, 1837 Midland Rd., Bay City, Mich. 48706

Filed Sep. 8, 1981, Ser. No. 300,323
Int. Cl.³ E05B *15/14, 27/06, 63/00*
U.S. Cl. 70—364 A **2 Claims**

1. A tamper-resistant lock comprising an outer cylinder adapted to be mounted in an entrance barrier; an inner cylinder rotatably mounted in said outer cylinder; a plurality of top pins

disposed in chambers in said outer cylinder; said top pins being urged toward said inner cylinder; a plurality of bottom pins disposed in chambers in said inner cylinder; said chambers in the inner and outer cylinders being in alignment when the lock is locked; at least one wafer disposed between said top pins and said bottom pins in at least one of the chambers when the lock



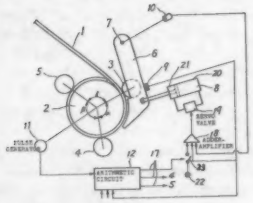
is locked; at least one of said wafers having a hole herein; at least one bottom pin having a hole therein; a plurality of trap pins mounted in trap pin chambers in the outer cylinder; said trap pins being urged toward the inner cylinder; said trap pins additionally having an extension thereon adapted to engage the hole in said wafer or said bottom pin when a wafer or a bottom pin having a hole herein passes a trap pin chamber.

4,380,164

WINDING MACHINE

Hiroaki Kuwano, Yokohama, Japan, assignor to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 19, 1981, Ser. No. 226,225
Int. Cl.³ B21C *47/04*
U.S. Cl. 72—21 **2 Claims**



1. In a winding machine of the type in which a strip is wrapped around a mandrel so as to establish stepped portions comprising the leading edge and trailing portions of the strip overlying said leading edge, and a plurality of wrapper rolls disposed around the mandrel are forced by individually controlled hydraulic cylinders associated therewith to press the strip against the mandrel, in combination:

(a) sensor means associated with at least one of said wrapper rolls and adapted to respond to displacement of the latter with respect to the mandrel and to generate a signal representative of said displacement;

(b) a first pulse generator operatively coupled to said mandrel and adapted to generate a pulse signal representative of an angle of rotation thereof;

(c) an arithmetic circuit connected to receive the signals from said sensor means and first pulse generator and generate for each respective wrapper roll a retraction signal corresponding for each respective wrapper roll to the time the stepped portion of said strip will pass each said respective wrapper roll; and

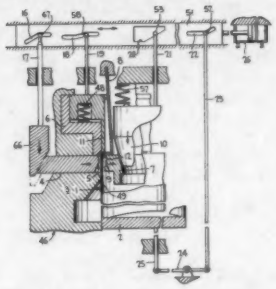
(d) means responsive to said reaction signals and operatively coupled to said hydraulic cylinders operative to cause each said hydraulic cylinder to be energized to retract the wrapper roll associated therewith away from said mandrel during the passing of the stepped portion of said strip past such associated wrapper roll.

4,380,165

SQUEEZER FLANGER

Willem P. Post, Diepenveen, Netherlands, assignor to Thomassen & Drijver-Verblifa N.V., Deventer, Netherlands

Filed May 22, 1981, Ser. No. 266,280
Int. Cl.³ B21D *22/00*
U.S. Cl. 72—355 **11 Claims**



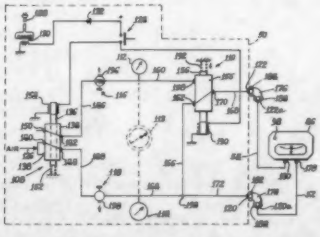
1. A method of manufacturing a sleeve body having an outwardly directed circumferential flange arranged at the side of an open end and a circular constriction adjoining the same by pressing a substantially cylindrical sleeve body near one opening thereof along the entire circumference with the aid of a plurality of radially inwardly and outwardly movable outer segments, the form of the inner surface of which corresponds with the form to be imparted to the constriction, at the same time on all sides inwardly against an inner support, the diameter of which can be reduced, characterized in that the inner support, the form of the outer surface of which at least partly matches that of the inner surface of the desired constriction, is loaded by a spring force having a radial, outwardly directed component, which exceeds the force required for the radial narrowing of the sleeve body, but which is smaller than the radially directed force by which the outer segments are pushed inwardly.

4,380,166

TESTING APPARATUS FOR A DUAL PRESSURE INDICATOR AND CONTROL UNIT FOR PASTEURIZATION EQUIPMENT

Robert A. Crombie, 521 Cowles Ave., Joliet, Ill. 60435

Continuation-in-part of Ser. No. 237,687, Feb. 23, 1981, abandoned. This application Mar. 5, 1982, Ser. No. 355,188
Int. Cl.³ G01N *27/00*
U.S. Cl. 73—4 R **10 Claims**



1. Testing apparatus for a dual pressure indicator and control

unit of the kind used to monitor and control pasteurizing equipment, said unit having two pressure ports with indicating means associated therewith, said unit also having a control switch operable in response to a predetermined pressure differential between said ports, said ports being connected in use to pressure sensors at a pasteurized product outlet and a raw product inlet respectively in such pasteurizing equipment, said testing apparatus comprising:

valve means;

an input line at the input side of said valve means and adapted to be connected to a fluid pressure source;

two output lines at the output side of said valve means and adapted to be connected respectively to the two pressure ports of a pasteurizing system dual pressure indicator and control unit;

two pressure regulators;

a pressure gauge on the output side of each pressure regulator;

means for selectively placing said valve means either in a tracking test mode or a differential test mode;

said valve means in said tracking test mode connecting both of said output lines to said input line through a single one of said pressure regulators to thereby apply identical pressures determined by said one pressure regulator to said output lines; and

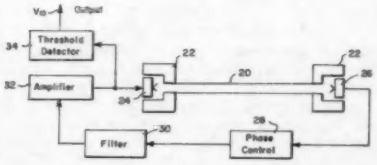
said valve means in said differential test mode connecting said output lines to said input line through respective ones of said two pressure regulators to thereby apply pressures determined by said respective pressure regulators to said output lines.

4,380,167

APPARATUS AND METHOD FOR DETECTING A FRACTION OF A GAS

Richard L. Longini, Pittsburgh, Pa., assignor to Energy Controls, Inc., Denver, Colo.

Filed Mar. 18, 1981, Ser. No. 245,108
Int. Cl.³ G01N *29/02*
U.S. Cl. 73—24 **5 Claims**



1. An apparatus for detecting a fraction of a gas in a carrier gas when water vapor is present comprising:

(a) whistle means which has a resonant frequency and through which the gas and the carrier gas are passed, the resonant frequency changes as a function of the fraction of the gas, a temperature of the gas, and the water vapor and produces a whistle means output signal which is a function of the resonant frequency;

(b) correction means which senses the water vapor and the temperature and produces a correction means output signal which is a function of the water vapor and the temperature; and

(c) receiving means receiving the whistle means output signal and the correction means output signal and producing an output signal which is only a function of the fraction of the gas, the receiving means having:

(i) a timer means which produces a timer means output signal for a preset time; and

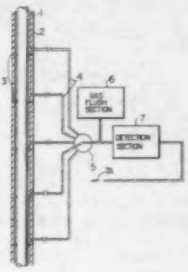
(ii) a counter means receiving the whistle means output signal, correction means output signal and the timer means output signal and producing an output signal which is only a function of the fraction of the gas.

4,380,168

SODIUM LEAKAGE DETECTION SYSTEM AND METHOD OF CONTROLLING THE SAME

Hidefumi Ibe, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 9, 1980, Ser. No. 167,029
Claims priority, application Japan, Jul. 12, 1979, 54-87499
Int. Cl.³ G01M *3/18*
U.S. Cl. 73—40.5 R **11 Claims**



1. A sodium leakage detection system comprising:

at least one sodium flow path;

a plurality of first sampling tubes for sampling surrounding gas at various points along said at least one sodium flow path and for conducting gas samples obtained at said various points away from said flow path;

a selector valve located at the gas exit ends of said plurality of first sampling tubes for selectively connecting one of said gas exit ends of said first sampling tubes with a second sampling tube;

said second sampling tube being connected to said selector valve for leading a sample gas passed through the selected one of the first sampling tubes to a sodium leakage detector section;

said sodium leakage detection section including means for detecting sodium leaked from the sodium flow path and contained in the sample gas in the vapor phase, said means including a pressure difference detector for detecting a difference between gas pressures before and after a filter disposed in a gas sample flow path within said detection section and a sodium ionization detector, disposed in parallel with said pressure difference detector with respect to said gas sample flow path, for determining the content of sodium ion contained in the sample gas; and

a flushing section for flushing inner walls of said selector valve and said second sampling tube each time the connection between one of said sampling tubes and said selector valve is changed over.

4,380,169

METHOD AND APPARATUS FOR MEASURING MOISTURE TENSION IN LEAVES OF GROWING PLANTS

Ellis R. Graham, Columbia, Mo., assignor to The Curators of the University of Missouri, Columbia, Mo.

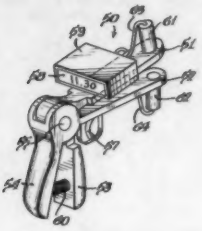
Filed Jan. 21, 1981, Ser. No. 226,765
Int. Cl.³ G01N *21/00*
U.S. Cl. 73—73 **2 Claims**

1. A method for measuring moisture tension in a leaf of a growing plant by means of an instrument having a pair of separable jaws with a standard light source mounted on one jaw and a photoelectric detector mounted on the other jaw, with both connected to a digital panel meter, the steps comprising:

initially squeezing the jaws together, without a leaf present, to bring the light source into coincidence with the detec-

tor to establish an initial intensity of light transmitted to the detector and display on the meter;

placing a leaf between the jaws and squeezing said jaws together to measure the light intensity transmitted through said leaf and displayed on said meter; and



comparing the measurements made with some predetermined standard measurements for the particular plant leaf of interest.

4,380,170

PROCESS FOR THE CHEMICAL PLOTTING OF BOUNDARY LAYER FLOWS, AND CHEMIGRAPHY MATERIALS FOR THE PRACTICE THEREOF

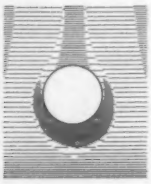
Richard Dötzer, Nuremberg, and Winfried Plundrich, Kalchreuth, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 14, 1980, Ser. No. 168,245

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1979, 2928690

Int. Cl.³ G01M *10/00*

U.S. Cl. 73—147 **11 Claims**



1. A process for the chemical plotting of boundary layer flows of liquids over a surface, comprising:

(a) providing said surface with a colorless, uncompacted or partially compacted anodically oxidizied aluminum layer thereon;

(b) adding to said liquid a visible dye includable and adsorbable in said aluminum layer; and

(c) exposing said surface to the flow of said liquid such that the dye contained therein is adsorbed in said aluminum layer to a degree characteristic of the flow of liquid thereover.

4,380,171

METHOD AND APPARATUS FOR MEASURING NORMAL CONTACT FORCES IN ELECTRICAL CONNECTOR

Terry J. Smith, Ephrata, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

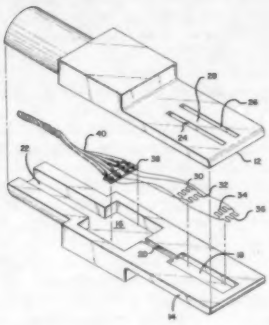
Filed Dec. 29, 1980, Ser. No. 220,926

Int. Cl.³ G01L *1/22, 5/00*

U.S. Cl. 73—161 **4 Claims**

1. A device for measuring the force of an electrical terminal mounted in an edge board connector and applied normal to the surface of a circuit board received in the connector, said device comprising:

a housing having two mating rigid metallic members defining a cavity therebetween, said members together having an outer profile enabling insertion of the device into said connector, one of said members having at least one pair of elongated slots defining therebetween at least one beam supported at both ends and disposed over said cavity, each said at least one beam being profiled to accommodate a terminal, and



a pair of strain gauges applied to each end of each said beam, means interconnecting said strain gauges of each beam in a respective balanced bridge configuration whereby when the device is inserted into the connector a respective terminal contacts and applies force normal to the surface of and intermediate the ends of a beam causing a difference in voltage output from said strain gauges in said pairs of strain gauges which difference is summed to give an indication of the force applied by said terminal in a direction normal to said beam.

4,380,172

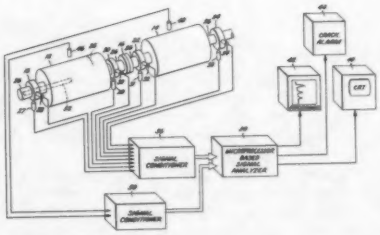
ON-LINE ROTOR CRACK DETECTION

Imdad Imam, Schenectady, and Leslie H. Bernd, Altamont, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 19, 1981, Ser. No. 236,007

Int. Cl.³ G01H *1/00;* **G01N** *29/00*

U.S. Cl. 73—659 **11 Claims**



1. For a motive fluid powered turbine, a method for detecting incipient cracks in the turbine rotor while the turbine is under load at substantially normal operating speed, comprising the steps of:

(a) obtaining from at least one vibration sensor, adapted to sense vibrations in said rotor, a signal representation of such vibrations;

(b) determining the spectral distribution of said vibration signal;

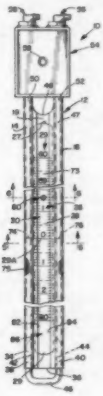
(c) causing a transient perturbation of said rotor to establish a transient vibratory response therein by changing the temperature of the turbine motive fluid;
(d) determining the spectral distribution of said vibration signal resulting during said transient vibratory response, and
(e) comparing the spectral distribution obtained in step (b) with the spectral distribution obtained in step (d), the change in spectral distribution between that of step (b) and that of step (d) being indicative of the presence and size of cracks in said rotor.

4,380,173

ROLL-UP TYPE U-TUBE MANOMETER

David A. Wozniak, Michigan City, Ind., assignor to Dwyer Instruments, Inc., Michigan City, Ind.

Filed Jun. 12, 1981, Ser. No. 273,215
Int. Cl.³ G01L 7/18
U.S. Cl. 73—747 **5 Claims**



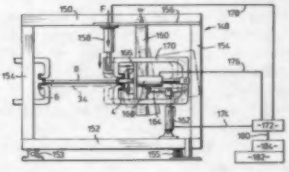
1. A flexible U-tube manometer of the roll-up type comprising, in combination:
an elongate flexible body formed from a transparent flexible plastic material and defining a pair of spaced apart tubes extending longitudinally of said body and joined together by a web integrally connecting same that extends substantially the length of said tubes,
said web defining a forward facing side surface on the front side of said body and a rearwardly facing side surface on the back side of said body,
said body along its front side and adjacent the juncture of the respective tubes and said web defining a pair of continuous flanges,
one of said flanges being disposed along one of said tubes and the other of said flanges extending along the other of said tubes,
said flanges being in overlying, closely spaced relation relative to said web and each defining a continuous projecting edge portion that parallels said body,
with said flange projecting edge portions being spaced apart transversely of said body,
said flanges and said web defining therebetween a scale slideway that is open between said flange edge portions,
an elongate flexible scale member mounted in said slideway for sliding movement therealong,
said scale member comprising a length of spring steel of film thickness dimensions that is arced forwardly of said body web along the length of said scale member,
said scale member bearing manometer scale indicia on its forward facing side and defining side edge portions therealong on either side of same that extend longitudinally of said body and that are respectively slidably engaged by the respective flanges, whereby said scale member is frictionally retained in selected zero adjust positions within said scale slideway,
said scale indicia including at the midlength portion of said scale a datum zero marker means on each of said scale side portions and aligned transversely of said scale,
means for connecting said body tubes at the lower end of said body,
means for connecting said tubes at the upper end of said body to locales of fluid pressure to be measured manometer style,
said tubes being substantially half filled with fluid pressure measuring liquid manometer style whereby when said manometer is vertically disposed in rectilinear relation and said means for connecting said tubes to the fluid pressure locales is vented for both tubes, the levels of said liquid in said tubes are horizontally aligned,
and a knob fixed to said scale member adjacent to said datum zero marker means and projecting forwardly from said scale member forwardly projecting side through and between said flange edge portions,
whereby when said levels of said liquid in tubes are horizontally aligned under said vented conditions, said scale member may be moved longitudinally of said slideway by the user of said manometer grasping said knob with one hand and eye leveling said scale member datum zero marker means with said horizontally aligned tubes liquid levels to zero set said manometer free of finger pressure application to said scale member at the ends of same.

4,380,174

APPARATUS FOR SHEAR TESTING WELDS

Joseph M. Tanenbaum, 4 Dewbourne Ave., Toronto, Ontario, Canada (M5P 1Z2)

Division of Ser. No. 179,634, Aug. 20, 1980. This application Jul. 21, 1981, Ser. No. 285,535
Claims priority, application Canada, Aug. 15, 1980, 358388
Int. Cl.³ G01N 3/24
U.S. Cl. 73—842 **5 Claims**

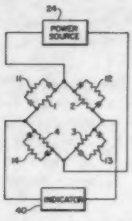


1. A device for non-destructively simultaneously testing the shear strength of at least four welded joints presented by a metallic truss having two spaced substantially parallel chord members joined together by a substantially coplanar web member bent into a substantially uniform undulating configuration between said chord members so as to present a series of alternate opposite apices at said bends welded to said spaced chord members respectively along regularly spaced intervals longitudinally of said chord members, said device including;
(a) means for simultaneously clamping said chord members in at least four positions adjacent said welded joints, including means for eliminating the twisting of said welded joints from said plane defined by said web member during said simultaneous clamping,
(b) and means for simultaneously applying a substantially perpendicular force relative said plane defined by said web member, for a selected timed interval, to at least four of said apices defined by said bent web member, adapted to test the shear strength of at least four of said welded joints.

4,380,175
COMPENSATED LOAD CELL

Neil C. Griffen, Columbus, Ohio, assignor to Reliance Electric Company, Cleveland, Ohio

Filed Jun. 12, 1981, Ser. No. 272,928
Int. Cl.³ G01L 1/22, 25/00
U.S. Cl. 73—862.67 7 Claims



2. A force measuring load cell arrangement comprising two elongated beams having substantially parallel longitudinal axes, means for rigidly connecting one end of the beams together, support means for rigidly connecting the other ends of the beams together and to a force receiver, means for mounting strain gages on the beams, at least one strain gage on one of the beams being displaced toward one side of the beam in a direction transverse to the longitudinal axes of the beams, at least one strain gage on the other beam being displaced toward the other side of said other beam in a direction transverse to the longitudinal axes of the beams, means for connecting the strain gages in a bridge arrangement, means for connecting a resistor to at least one of the strain gages on at least one of the beams to cause the output of the bridge arrangement to accurately represent the magnitude of a force applied to the force receiver independent of any offset of the force relative to the beams in at least the transverse direction.

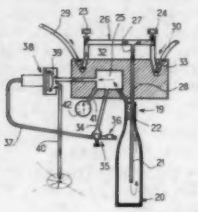
7. A method of compensating a force measuring load cell arrangement including two beams having substantially parallel longitudinal axes and supporting a force receiving member, the method comprising the steps of (1) placing at least one strain gage toward one side of one of the beams in a direction transverse to the longitudinal axes of the beams, (2) placing at least one strain gage toward the opposite side of the other beam in a direction transverse to the longitudinal axes of the beams, and (3) connecting a compensating resistor to at least one strain gage mounted on at least one of the beams to cause the response of the load cell arrangement to be independent of the location in at least the transverse direction of the force applied to the force receiving member.

4,380,176
ISOBAROMETRIC AND SELF-CONTAINED APPARATUS FOR SAMPLING PURPOSE ON GASEOUS DRINKS

Gilbert Bauer, Mutzig, and Michel Maurer, Strasbourg, both of France, assignors to Brasseries Kronenbourg, Strasbourg, France

Filed Feb. 4, 1981, Ser. No. 231,511
Claims priority, application France, Feb. 5, 1980, 80 02743
Int. Cl.³ G01N 1/10
U.S. Cl. 73—863.86 11 Claims

1. A self-contained constant pressure apparatus for sampling gaseous beverages, comprising a frame composed of a tripod and a central inclined stand surmounted by an upper block provided with a handle, with the central stand comprising a first support for a sample drawing recipient (20) and another support for an inert gas bottle (7), and the upper block comprising a distributor-head (16) including two taps (23,24) for admission and regulation of gas and liquid, an exit leading into a tap (35) for pressurising said exit, a regulation valve (38) acting upon distributor-head evacuation means and monitored by the tap (35); the distributor-head at its lower face having an stopper (19) with joint (18) for receiving a neck of the sample drawing recipient; the distributor-head including a common inner chamber (25) for said evacuation means including an

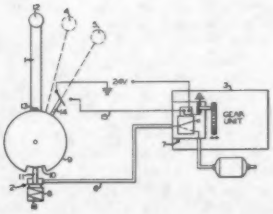


evacuation circuit (40), said apparatus including tightening means (43) for applying said neck of the sample drawing recipient against the stopper (19).

4,380,177
GEAR SHIFT CONTROL MECHANISM FOR SERVO-DRIVEN TRANSMISSION

Erich Reinecke, Burgdorf, and Alfred Klatt, Wathlingen, both of Fed. Rep. of Germany, assignors to WABCO Fahrzeugbremsen G.m.b.H., Hanover, Fed. Rep. of Germany

Filed Jan. 8, 1981, Ser. No. 223,524
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1980, 3007953
Int. Cl.³ G05G 5/04; F16H 57/06
U.S. Cl. 74—475 6 Claims



1. A gear shift mechanism for indirectly shifting the gears in a gear unit via intermediate gear drive means comprising:

(a) a manually operable gear shift lever having first, second, and third positions, said intermediate gear drive means being operative to effect a change of gearing of said gear unit in response to movement of said gear shift lever from said first position to said second position;

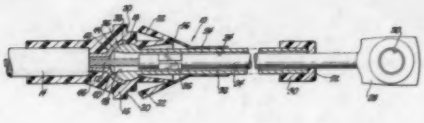
(b) locking means manually engageable with said gear shift lever in said second position thereof for preventing movement of said gear shift lever to said third position; and

(c) gear change sensing means for operating said locking means in response to completion of said gear change to accordingly effect disengagement of said locking means and thereby permit further movement of said gear shift lever from said second position to said third position, by which movement an operator of said gear shift lever is apprised of completion of said gear change.

4,380,178
REMOTE CONTROL ASSEMBLY (SWIVEL INSERT)

William G. Bennett, Troy, and Arthur L. Spease, Livonia, both of Mich., assignors to Teleflex Incorporated, Limerick, Pa.

Filed Jul. 21, 1980, Ser. No. 170,888
Int. Cl.³ F16C *1/10*
U.S. Cl. 74—501 P 6 Claims

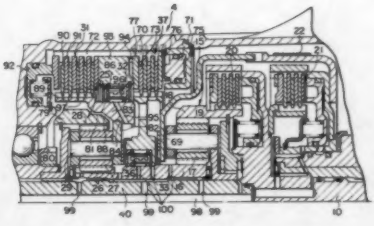


1. A motion transmitting remote control assembly (10) of the type for transmitting motion in a curved path by a flexible motion transmitting core element (12), said assembly (10) comprising a flexible motion transmitting core element (12) having a terminal portion, a conduit (14) for supporting said core element (12), said conduit having an end portion, an end fitting (16) disposed about said end portion of said conduit, (14) a rod (24) attached to said terminal portion of said core element, (12) a swivel tube (32) having a bore (34) therethrough for swivelling movement relative to said end fitting (16) and movably supporting said rod (24), said swivel tube (32) connected to said end fitting (16) at a swivel joint (36) and having a front end face (40) and characterized by said swivel joint (36) including a male swivel portion (38) having a partially convex spherical surface extending from its intersection with the exterior of said swivel tube (32) to said front end face (40) of said swivel tube (32) and including a cup-shaped insert (42) engaging said convex spherical surface at least beyond said front end face (40), said end fitting (16) encapsulating said end portion of said conduit (14) and said insert (42) and the remainder of said convex spherical surface on said swivel tube (32).

4,380,179
ENGAGEMENT DEVICE IN AUTOMATIC TRANSMISSION

Seitoku Kubo, Toyota; Koujiro Kuramochi, Okazaki, and Tatsuo Kyushima, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 23, 1980, Ser. No. 190,034
Claims priority, application Japan, May 6, 1980, 55-58734
Int. Cl.³ F16H *57/10, 37/08;* F16D *65/78*
U.S. Cl. 74—762 4 Claims



1. In an automatic transmission including a housing, a sun gear, a ring gear and a carrier rotatably supporting a pinion on a pinion shaft, said pinion meshing with said sun and ring gears, the improvement comprising:

a hub secured to said carrier and extending radially outside of and axially overlapping said ring gear, said hub having a small diameter portion constituting an inner race and having an axially adjacent large diameter portion having external spline-teeth on the outer peripheral wall thereof, the outer peripheral wall of said small diameter portion having a friction surface thereon;

a cylindrical outer race fitted on internal spline-teeth of said housing and disposed radially outward of and axially aligned with said inner race;

a friction element disposed radially between said inner and outer races for engaging said friction surface on the outer peripheral wall of said small diameter portion and said outer race, said small diameter portion having a radially running hole for conducting lubricating oil into said friction element;

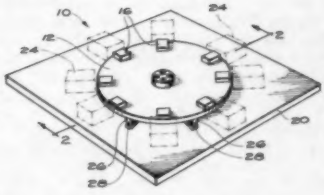
a first brake axially adjacent said outer race, said first brake including a plurality of said first friction plates axially slidably fitted on the external spline-teeth of said large diameter portion and a plurality of second friction plates axially slidably fitted on the internal spline-teeth of said housing, said first and second friction plates being interleaved; and

a second brake axially adjacent said outer race opposite said first brake, said second brake including a plurality of third friction plates, and a plurality of fourth friction plates axially slidably fitted on the inner spline-teeth of said housing, said third and fourth friction plates being interleaved.

4,380,180
ENERGY STORAGE FOR INDEXING MECHANISM

James C. Foote, and Dennis R. Zander, both of 1669 Lake Ave., Rochester, N.Y. 14650

Filed Jun. 2, 1980, Ser. No. 155,689
Int. Cl.³ B23Q *17/00*
U.S. Cl. 74—821 1 Claim



1. Indexing apparatus comprising:

a platform;

a work member movable relative to said platform along a plurality of spaced dwell positions;

drive means for intermittently moving said work member between the dwell positions;

a plurality of first magnets on said work member and movable therewith; and

a plurality of second magnets positioned on said platform such that poles of said first magnets align with like poles of said second magnets when said work member is in each of the dwell positions, whereby the kinetic energy of said work member approaching a dwell position is converted to stored energy by said first and second magnets and the stored energy is applied back to said work member as said work member moves away from a dwell position.

4,380,181

STUD MANIPULATING DEVICE

Thomas W. Bunyan, London, England, assignor to Pilgrim Engineering Developments Limited, Essex, England

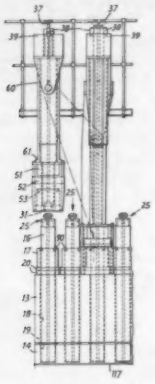
PCT No. PCT/GB79/00161, § 371 Date Jun. 3, 1980, § 102(e) Date May 14, 1980, PCT Pub. No. WO80/00672, PCT Pub. Date Apr. 17, 1980

PCT Filed Oct. 3, 1979, Ser. No. 193,189

Claims priority, application United Kingdom, Oct. 3, 1978, 39129/78

Int. Cl.³ B25B *29/02*

U.S. Cl. 81—57.38 **6 Claims**



1. A stud manipulating device for inserting a stud into a bore in a workpiece, tensioning the stud, tightening a working nut on the stud, or for slackening the nut on the stud and removing the stud from the workpiece, the device comprising means for engaging the working nut and interlocking with the nut against relative rotational movement, first drive means coupled to the working-nut engaging means and operable in use to rotate the working nut, a top nut for securing onto the end of the stud, second drive means operable to rotate the top nut, means for raising and lowering the top nut, a hydraulic pressure member located between the top nut and the workpiece and operable to tension the stud by means of the top nut, stud engaging means engagable with the stud to interlock with the stud against relative rotational movement, means for raising and lowering the stud-engaging means, and clutch means operable between the second drive means and the stud engaging means and which is engaged when the top nut is in a raised position and the stud-engaging means is in a lowered position, to couple the stud engaging means in rotation with the second drive means.

4,380,182

ARRANGEMENT FOR REPLACEABLY HOLDING A STRIPPER OF A TOOL HOLDER OF THE TOOL, AND A REPLACING TOOL FOR REPLACING THE STRIPPER

Walter Bredow, and Gerhard Otto, both of Alfeld, Fed. Rep. of Germany, assignors to C. Behrens AG, Alfeld, Fed. Rep. of Germany

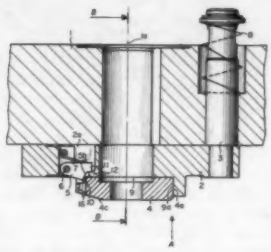
Filed Jan. 14, 1981, Ser. No. 225,966

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1980, 3005613

Int. Cl.³ B21D *45/00*

U.S. Cl. 83—140 **21 Claims**

1. A stripper arrangement for a working tool having an axis, such as a revolving tool of a revolving cutting press, comprising a stripper; a stripper shoe arranged to be mounted on a lower side of a tool holder of a tool and having an inner opening for receiving said stripper and a wall which bounds said opening and includes an abutment wall portion, said opening being arranged so that said stripper can be inserted into the same by movement in a plane transverse to the axis of the tool and abut against said abutment wall portion in inserted condition; means for retaining said stripper in said opening of said stripper shoe and including a retaining member which is deflectable in direction from the tool to an operative position in which said retaining member engages with said stripper in-



serted in said opening of said stripper shoe so as to retain said stripper in said opening, and displaceable to an inoperative position in which said retaining member does not engage said stripper inserted in said opening, so that said stripper can be withdrawn from said opening to be replaced by a new stripper; and means for urging said retaining member so as to deflect the same from the tool to said operative position.

4,380,183

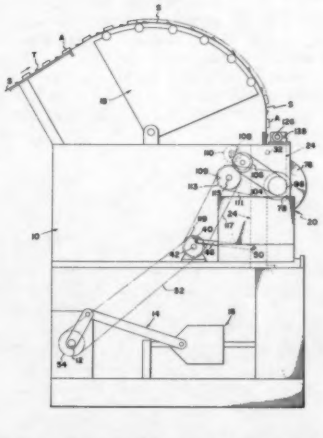
PLASTICS TRIM PRESS SHEET FEEDING MECHANISMS

Fred L. Greynolds, Beaverton; Robert C. Whiteside, Harrison, and Doyle D. Durkee, Beaverton, all of Mich., assignors to Leesona Corporation, Beaverton, Mich.

Filed May 20, 1981, Ser. No. 265,572

Int. Cl.³ B26F *1/40*; B65H *17/36*, *17/40*

U.S. Cl. 83—244 **21 Claims**



1. In a trim press for trimming articles integrally formed in uniformly spaced succession in a sheet of thermoplastic material from said sheet, said press comprising a frame, cyclically actuated die means for trimming said articles from said sheet, said sheet having uniformly spaced feed tabs thereon, and cyclically operable feed means engageable with said tabs for feeding said sheet in step-by-step movement to said die means in synchronism with the actuation of said die means; the im-

provement wherein said feed means comprises treadle means mounted adjacent its upper end upon said frame for pivotal movement about a first horizontal axis, slide means mounted on said treadle means adjacent the lower end thereof for reciprocation along a first path normal to said first axis, feed finger means mounted on said slide means, a first rotary member, mounting means mounting said first rotary member on said frame for rotation about a second axis parallel to said first axis, first link means pivotally connected at one end to said first rotary member at a location offset from said second axis and pivotally connected at its opposite end to said slide means to cyclically reciprocate said slide means along said first path in response to rotation of said first rotary member, a second rotary member mounted on said frame for rotation about a third axis parallel to said first axis, second link means pivotally connected at one end to said second rotary member at a location offset from said third axis and pivotally connected at its opposite end to said treadle means adjacent the lower end thereof for pivotally oscillating said treadle means about said first axis upon rotation of said second rotary member, and first drive means for driving said first and second rotary members in continuous rotation synchronized with the actuation of said die means.

4,380,184

ELECTRONIC MUSICAL INSTRUMENT

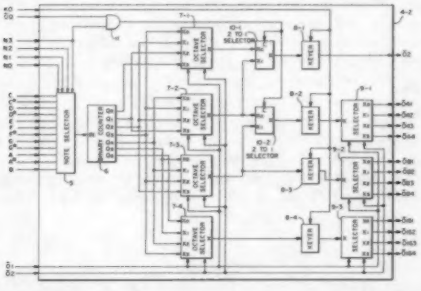
Tetsuhiko Kaneaki, Ashiya; Kazuhiko Murase, and Junnosuke Shigeta, both of Hirakata, all of Japan, assignors to Matsushita Electrical Industrial Co., Ltd., Osaka, Japan

Filed Apr. 14, 1981, Ser. No. 254,152

Claims priority, application Japan, Apr. 17, 1980, 55-51216; Apr. 18, 1980, 55-52035

Int. Cl.³ G10H *5/06*

U.S. Cl. 84—1.01 **7 Claims**



1. An electronic musical instrument comprising: a generator assigner which outputs assignment signals composed of note data representing the name of the particular note whose tone signal has been designated by a particular key stroke, and octave data representing the octave number of the selected tone; and at least one tone generator which has at least one pitch signal generating means and at least one octave controlling means, wherein said pitch signal generating means is controlled by said note data and generates the highest frequency pitch signal corresponding to the note name of the tone selected, and wherein at least one of said at least one tone generators produces plural signals by dividing said highest frequency pitch signal, and wherein said octave controlling means is controlled by said octave data and selects pitch signals from said plural signals, and said pitch signals have octave numbers corresponding to the tone selected, and said octave controlling means contains means for modifying the octave number of the pitch signals in accordance with said note data.

4,380,185

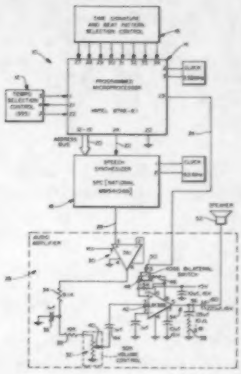
TALKING METRONOME

Gayle Holcomb, Frankfort, Ky., assignor to V-T Rhythms, Inc., Frankfort, Ky.

Filed Nov. 16, 1981, Ser. No. 321,627

Int. Cl.³ G10F *1/00*

U.S. Cl. 84—1.03 **12 Claims**



1. A metronome comprising:

(a) means for selecting a tempo at which human voice patterns will be reproduced, the selected tempo being variable between a minimum and a maximum frequency;

(b) means for selecting a combination of time signature beat pattern at which the human voice patterns will be produced; and

(c) means responsive to the means for selecting a tempo and the means for selecting a combination of time signature and beat pattern for producing a human voice pattern comprised of a sequence of successive numbers enunciated at the selected tempo and time signature and beat pattern, the frequency of enunciation of the successive numbers per measure of the selected time signature and beat pattern being equal to the selected tempo and the successive numbers enunciated per measure being a function of the selected time signature.

4,380,186

METHOD AND APPARATUS FOR FABRICATING PIPELESS EXPLOSIVE AND PROPELLANT CHARGES

Richard Bührer, Thun, Switzerland, assignor to Schweizerische Eidgenossenschaft, represented by Eidg. Munitionsfabrik Thun der Gruppe für Rüstungsdienste, Thun, Switzerland

Filed Aug. 31, 1981, Ser. No. 297,629

Claims priority, application Switzerland, Sep. 15, 1980, 6889/80

Int. Cl.³ F42B *1/00*

U.S. Cl. 86—20 D **13 Claims**

1. An apparatus for fabricating pipeless explosive charges and propellant charges of a predetermined spatial configuration and composition by molding, wherein the solidification phenomenon within the melt is performed with increasing delay from the bottom towards the top, comprising:

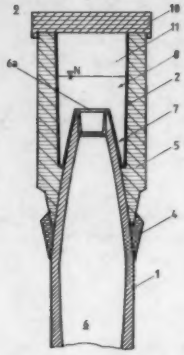
an insulation sleeve arranged externally of a mold intended to receive the charge;

said insulation sleeve being structured to possess a radial thermal conductivity which in any horizontal plane is at least approximately equal to the radially outflowing quantity of heat in the cross-section of the same horizontal plane; and

said quantity of heat being released during the solidification of the melt.

11. A method for fabricating pipeless explosive charges and propellant charges comprising the steps of:

heating an insulation sleeve containing a heat carrier for at least one hour to at least the melting temperature of a heat storage;



casting the charge into a casting mold; and

cooling the casting mold during at least two temperature steps.

4,380,187

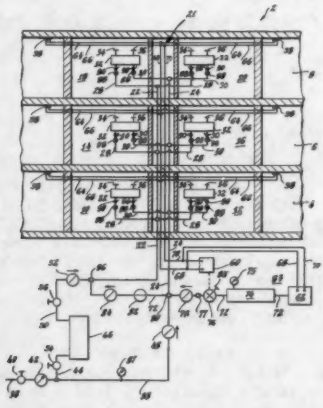
METHOD AND SYSTEM FOR PROVIDING LIFE-SUSTAINING AIR TO PERSONS ENTRAPPED WITHIN A BURNING BUILDING

Edward A. Wicks, 93 Long Ridge Rd., Danbury, Conn. 06810

Filed May 6, 1981, Ser. No. 260,903

Int. Cl.³ F24F *7/06*

U.S. Cl. 98—39 **21 Claims**



21. A system for providing pressurized air to preselected rooms in a building for sustaining the life of occupants trapped therein by a fire, said system utilizing at least one of the water feed pipes supplying water to the rooms of the building for supplying air to said rooms, said system comprising:

a source of pressurized air adapted to be selectively coupled in fluid flow relationship to at least one of the water feed pipes that supplies water to said preselected rooms, the pressure of said air from said source being greater than the normal water pressure within said at least one water feed pipe to which said source is selectively coupled, and

means for feeding said pressurized air from said source through said at least one of the water feed pipes for providing said air from said source to said preselected rooms in the event of a fire,

whereby life sustaining air from said source can be provided to said preselected rooms through said at least one water supply feed pipe.

4,380,188

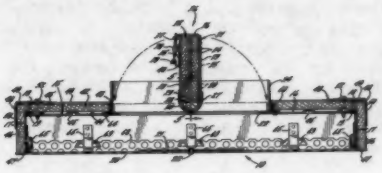
HEAT-RETARDING AIR DISTRIBUTION UNIT

Richard K. Nichols, Huntsville, Ala., assignor to Barber-Colman Company, Rockford, Ill.

Filed Jan. 28, 1981, Ser. No. 229,300

Int. Cl.³ F24F *13/08*

U.S. Cl. 98—40 D **13 Claims**



1. A heat-retarding air distribution unit comprising a downwardly opening box made of sheet metal, said box having a generally rectangular and horizontal top wall and having side walls depending from said top wall, an air inlet opening in said top wall, a damper disposed adjacent said opening and normally located in an open position, means for causing said damper to close said opening automatically when the temperature therein exceeds a predetermined value, a grille secured to the lower end of said box adjacent the lower margins of said side walls and operable to diffuse air flowing downwardly through said box from said inlet opening, a relatively rigid top panel of heat insulating material lining the upper side of said top wall, relatively rigid side panels of heat insulating material lining the outer sides of said side walls, an outwardly projecting lip formed intergrally with the lower margin of each of said side walls, the lower edges of said side panels resting on said lips, and means for securing said panels to said walls, said securing means comprising a rectangular array of inverted L-shaped bars, said bars having horizontal flanges overlying said top panel and having vertical flanges lying alongside the outer sides of said side panels, and screws extending through the horizontal flanges of said bars, through said top panel and threaded into the top wall of said box.

4,380,189

INDUSTRIAL CHIMNEYS WITH FORCED DRAUGHT

Jean-Francois Vicard, Lyons, France, assignor to Societe Lab, Lyons, France

Filed May 4, 1981, Ser. No. 260,442

Claims priority, application France, May 9, 1980, 80 10971

Int. Cl.³ F23L *17/02*

U.S. Cl. 98—58 **1 Claim**

1. A forced-draught chimney for the discharge of gaseous products from a source into the atmosphere, comprising:

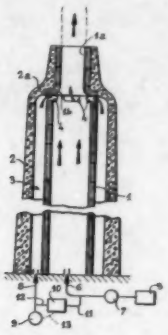
a substantially vertical column having a lower end and an upper end, and the column defining an inner space having a first inner diameter at its upper end;

a substantially vertical discharge nozzle extending coaxially upwardly from said column, the nozzle having a lower portion joining the upper end of the column and having an opening therethrough communicating with the inner space of the column, the lower portion of the nozzle opening being rounded to decrease upwardly from a lower inner diameter of the nozzle equal to said first diameter of the column to a second inner diameter of the upper

portion of the nozzle which is smaller than said first diameter;

an outer wall surrounding and enclosing the upper end of the column and defining with the column an intermediate annular space which is closed at the top of the column;

the upper end of the column having around its entire periphery centripetally directed apertures extending therethrough immediately below the rounded lower portion of the nozzle, and communicating from the intermediate space into the inner space of the column where it joins the nozzle;



means operative to force gaseous products under pressure into the inner space of the column; and

means operative to force an auxiliary gas under pressure into the intermediate space, the auxiliary gas pressure being slightly greater than the pressure of the gaseous products in the column to cause said auxiliary gas to flow centripetally through said apertures and thereafter to surround said gaseous products with a continuous thermally-insulating sleeve and to rise with said gaseous products upwardly through the decreased diameter nozzle which transforms static gas pressures into upward kinetic energy.

4,380,190

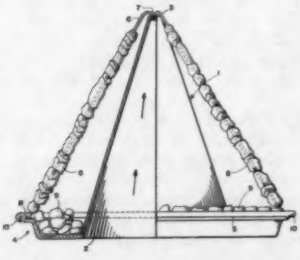
COOKING CONE

Robert J. Adamis, 3425 Monterrey St., San Mateo, Calif. 94403

Filed Feb. 17, 1981, Ser. No. 234,878

Int. Cl.³ A47J 37/04

U.S. Cl. 99—345 **4 Claims**



1. A cooking cone comprising:

a hollow frustro-conical body open at its larger bottom and at its top to permit the rising of heated air through the inside thereof;

an annular dish around the bottom of said cone to accommodate portions of food to be basted by juices dripping from the food along the exterior of said conical body;

said dish being formed on an annular bottom plate integral with and extending outwardly from the lower edge of said cone;

a plurality of skewers;

a hook on each of said skewers for hooking over the edge of the open top of said cone for hanging food around the exterior body of said cone whereby said food is exposed simultaneously to external and internal heat;

a source of heat applied to the bottom of said cone and said dish.

4,380,191

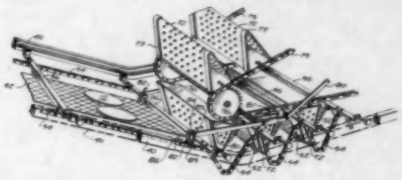
DOUGH FORMING AND COOKING APPARATUS

Rafael C. Gallegos, 1018 E. 21st St., Santa Ana, Calif. 92706; Antonio Gallegos, 9411 Brewer Way, Villa Park, Calif. 92667; Robert M. Gallegos, 17961 Darmel Pl., Santa Ana, Calif. 92705; Jess E. Gallegos, deceased, late of Santa Ana, Calif., and by Adeline Gallegos, legal representative, 1707 W. Flora, Santa Ana, Calif. 92704

Filed Mar. 25, 1977, Ser. No. 781,434

Int. Cl.³ A47J 37/12

U.S. Cl. 99—404 **15 Claims**



13. Apparatus for forming and cooking articles made from material of dough-like consistency, comprising:

(a) means adapted to contain a fluid cooking medium at at an elevated temperature;

(b) an endless belt means adapted for continuous operation;

(c) a plurality of convex porous mold members arranged on a surface of said belt means;

(d) a web-like articulated continuous conveyor means adapted to receive finite quantities of amorphous dough-like material; said web-like conveyor means comprising an endless belt of chain mesh, a continuous chain member attached to and contiguous with each of the two lateral edges of said chain mesh belt, and a plurality of bar members arranged transversely across said chain mesh belt to form a plurality of junctions between parallel portions of said two chain members through said bar members;

(e) means for intermittently positioning consecutive portions of said web-like conveyor means into operative engagement with consecutive mold members arranged on said continuous belt means to shape each of said quantities of material of amorphous, dough-like consistency into articles of desired configuration, said engaged portions of said conveyor and belt means thereafter moving into said fluid cooking medium containment means;

(f) guide means arranged interiorly and exteriorly of said fluid cooking medium containment means and adapted to direct the transportation of said operatively engaged article-containing portion of said conveyor and belt means through said fluid cooking medium containment means in a submerged position and to thereafter facilitate their separation as they emerge from said cooking medium containment means, said articles being removed on said conveyor means in an attitudinal orientation promoting optimal drainage and return of entrained fluid cooking medium to the cooking medium containment means, said guide means comprising continuous parallel rail members arranged on opposite lateral sides of said apparatus, a portion of each rail member being arranged within the fluid cooking medium containment means, and the remainder of each rail member being arranged exteriorly of

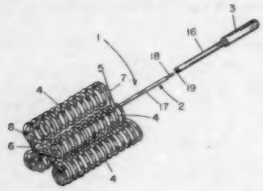
said containment means, and wherein said guide means include a downwardly convergent, upwardly divergent portion beginning in the vicinity where said operatively engaged article-containing portions of said conveyor and belt means begin their separation as they emerge from said fluid cooking medium containment means.

4,380,192

HOT DOG BROILER AND METHOD FOR MAKING SAME

Mark N. Doren, Grand Rapids, Mich., assignor to Markson Manufacturing Company, Grand Rapids, Mich.

Filed Aug. 14, 1981, Ser. No. 292,740
Int. Cl.³ A47J *43/18*
U.S. Cl. 99—441 **9 Claims**



8. An apparatus for broiling hot dogs and the like over an open fire, comprising:

an elongate, rigid, rod having a handle attached to one end thereof, and threads formed on the other end of said rod;

a plurality of baskets shaped to retain hot dogs therein; each of said baskets including a closed end, and an open end through which the hot dogs are inserted into said baskets; said baskets having an identical shape, whereby the same are interchangeable; each of said baskets having a support wire extending laterally from the closed end and the open end thereof for connecting said baskets to said rod; each support wire having a bent over free end which forms an eyelet shaped to receive said rod closely therethrough; each wire support eyelet disposed at the open end of said baskets being threaded over said threads, onto the other end of said rod for non-fixedly connecting the open ends of said baskets with said rod; and each wire support eyelet disposed at the closed end of said baskets being positioned on said threads in a side-by-side relationship; and

a pair of threaded nuts connected with the threaded end of said rod on opposite sides of the closed end eyelets assembled thereon, and being tightened thereagainst, whereby said closed end eyelets are securely locked in place against each other in a sandwiched fashion between said nuts, thereby fixedly connecting the closed ends of said baskets with said rod.

4,380,193

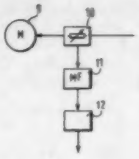
DEVICE FOR PREPARING CHOCOLATE

Jan C. Tadema, Bergen, Netherlands, assignor to Wiener & Co. B.V., Amsterdam, Netherlands

Continuation of Ser. No. 91,000, Nov. 5, 1979, abandoned. This application Feb. 25, 1981, Ser. No. 238,014
Claims priority, application Netherlands, Nov. 24, 1978, 7811567
Int. Cl.³ A23G *1/04, 1/10*
U.S. Cl. 99—452 **9 Claims**

1. A device for batch treatment of ingredients for the manufacture of chocolate, which comprises the combination of:

milling means for grinding a quantity of the ingredients and mixing means for mixing the ground ingredients, first means for continuously circulating the ingredients from said milling means to said mixing means and second means for continuously circulating said ingredients back to said milling means from said mixing means whereby to form a closed recirculating system in which the viscosity of the ingredients tends to rise incidental to the milling and mixing thereof during each cycle of circulation; and



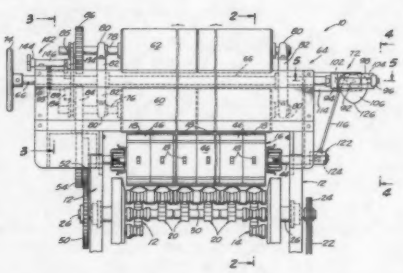
dosing means for introducing a predetermined small amount of viscosity reducing agent other than cocoa butter into the circulating ingredients only when the viscosity of the ingredients exceeds a selectable threshold value.

4,380,194

APPARATUS FOR PRINTING INDICIA ON OBJECTS

Ned C. Carter, Chino, and Jerry W. Cramer, Upland, both of Calif., assignors to Sunkist Growers, Inc., Sherman Oaks, Calif.

Filed Oct. 12, 1978, Ser. No. 950,784
Int. Cl.³ B41F *17/34*
U.S. Cl. 101—35 **6 Claims**



1. In apparatus for printing indicia on objects in which a conveyor successively transports the individual objects to a printing station and a die roll in the printing station is synchronously rotatable to successively move printing dies arranged upon its periphery from an inking roll into printing engagement with the objects as they are delivered to the printing station, the improvement comprising:

a plurality of inking rolls each supported upon a drive shaft and being adapted to be charged with inks having different characteristics, said drive shafts being journalled on a turret mounted on a manually rotatable supporting shaft and in fixed circumferentially and radially spaced relation;

means for releasably locking said turret in positions of rotation wherein a selected inking roll is in operative engagement with the die roll;

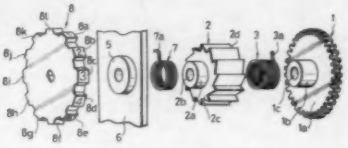
means for establishing a driving connection with the drive shaft of the selected inking roll in its operative position for driving it in synchronized relation to the die roll; and

said locking means including adjustment means for circumferentially varying the radial angular locked position of the turret within predetermined limits in order to adjust the engagement pressure between the selected inking roll and the die roll.

4,380,195
TYPE SETTING DEVICE FOR PRINTERS

Fumihisa Hori, Tamayama, and Mikio Miyajima, Nishine, both of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed May 30, 1980, Ser. No. 155,147
Claims priority, application Japan, May 31, 1979, 54-73643[U]
Int. Cl.³ B41J *1/24*
U.S. Cl. 101—93.17 10 Claims

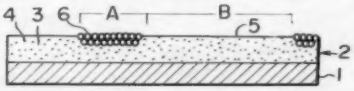


1. A device for positioning a selected one of a plurality of type elements carried on the circumference of a type wheel in a printing position along a line to be printed, including a ratchet gear connected for rotation with said type wheel, a motor adapted to be driven continuously in one direction during printing along said line, a drive gear connected for rotation continuously with said motor, clutch means including a first spring element connected to said ratchet gear for connecting the torque of said motor to said ratchet gear in a manner normally rotating said ratchet gear in a first direction during rotation of said drive gear by said motor to continuously rotate said type wheel in said first direction but allowing the torque of said motor to be disconnected from said ratchet gear to enable the rotation of said ratchet gear to be stopped, means operated electromagnetically for disconnecting the torque of said motor from said ratchet gear and stopping rotation of said ratchet gear when a selected type element is in a printing position along said line, and means including a second spring element engaged with said ratchet gear for allowing free rotation of said ratchet gear in said first direction but preventing rotation of said ratchet gear in a direction opposite that of said first direction during operation of said stopping means.

4,380,196
PLATE FOR LITHOGRAPHY OR OFFSET PRINTING

Yoshiaki Kato, Neyagawa; Akira Fushida, Suita; Yasuo Ueda, Kobe; Yasusuke Tohi, Sakai, and Tatsuo Aizawa, Osaka, all of Japan, assignors to Mita Industrial Company Limited, Osaka, Japan

Filed Apr. 15, 1977, Ser. No. 788,088
Claims priority, application Japan, Apr. 26, 1976, 51-46515
Int. Cl.³ B41N *1/14*
U.S. Cl. 101—453 5 Claims

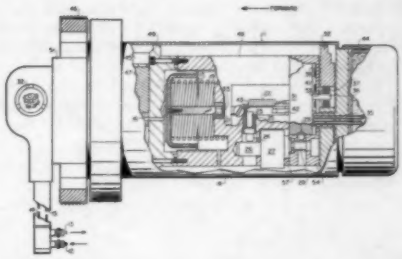


1. A plate for lithography or offset printing comprising a flexible substrate and a water-resistant coating layer formed on said flexible substrate, said water-resistant coating layer being composed of a water-insoluble resin binder comprising 5 to 45% by weight of a wax and 55 to 95% by weight of a water-insoluble resin, and dispersed in said binder, an inorganic pigment capable of being rendered hydrophilic by an etching treatment, said water-resistant coating layer including an oleophilic ink-supporting portion and an etched hydrophilic ink-repelling portion, wherein said oleophilic ink-supporting portion is formed by applying to said water-resistant coating layer magnetic developer particles comprising 100 parts by weight of triiron tetroxide, 10 to 150 parts by weight of a binder, and 1 to 20 parts by weight of carbon black, said developer particles consisting essentially of nuclear particles composed of said triiron tetroxide, said binder and a part of carbon black and the remainder of carbon black crumbed on the nuclear particles, and passing the water-resistant layer having the image of the developer particles thereon between a pair of rollers whereby the magnetic developer particles are tightly embedded in the water-resistant coating layer and the water-resistant coating layer is smoothened and rendered compact in said hydrophilic ink-repelling portion.

4,380,197
SAFETY AND ARMING DEVICE/CONTACT FUZE

Jefferson O. Eaton, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 26, 1978, Ser. No. 915,030
Int. Cl.³ F42C *5/00, 15/00*
U.S. Cl. 102—228 8 Claims



1. A pneumatically operated safe and arm device for use in an ordnance item in a fluid environment, comprising:

a housing having an interior chamber;

a piston sealingly retained within said housing and dividing said chamber into first and second volumes, said piston including a rigidly attached output rod having a free end, said piston and output rod being movable linearly between first and second positions and resiliently urged toward said first position;

a disk mounted to said housing and rotatable about an axis between safe and armed positions, said disk including at least two explosive paths, each path having at least two exposed ends, and said disk being resiliently urged toward said safe position;

resilient force transmission means linking said rod and said disk for converting linear rod motion to rotational disk motion;

dynamic pressure means communicating between said fluid environment and said interior chamber for supplying fluid dynamic pressure to said first volume;

static pressure means communicating between said fluid environment and said interior chamber for supplying fluid static pressure to said second volume;

first interlock means releasably engaging said rod in a locking position for preventing said linear rod motion, said first interlock means being movable between said locking position and a releasing position, and resiliently urged toward said releasing position;

second interlock means releasably engaging said disk in a jamming position for preventing rotation of said disk, said second interlock means being movable between said jamming position and a freeing position;

a rotary solenoid attached to said housing, having a shaft configured for rotation between preventing and enabling positions, and being resiliently urged toward said preventing position, said shaft having first and second camming

lobes contacting and operating said first and second interlock means respectively in response to rotation of said shaft;

disk latching means pivotally attached to said housing and releasably engaging said disk in a storing position, said disk latching means being pivotal between said storing position and a tripping position, and resiliently urged toward said storing position, for releasing said disk in response to said output rod moving from said first position to said second position;

instantaneous detonation means attached to said housing and positioned in alignment with one end of one of said explosive paths in said disk in said armed position for instantaneously detonating said one explosive path in response to a first signal;

delay detonation means attached to said housing and positioned in alignment with one end of the other of said explosive paths in said disk in said armed position for delayably detonating said other explosive path in response to a second signal; and

detonation output means attached to said housing and positioned in alignment with said other ends of said explosive paths in said disk in said armed position for directing detonation energy from detonation of at least one of said explosive paths to the exterior of said housing; whereby relative movement of said ordnance item in said fluid environment results in fluid static and dynamic pressures being applied to said piston, said relative movement at velocities greater than a preselected minimum causing said piston, enabled by release of said first interlock means, to load said resilient force transmission means and trigger rotation of said disk, thereby aligning an explosive train.

4,380,198

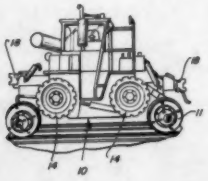
VEHICLE HAVING IMPROVED COUPLING SYSTEM AND SYSTEM FOR ABSORPTION OF SHOCK ON COUPLING

Eugene B. White, Jr., Park Forest, Ill., assignor to White Machinery Corporation, Joliet, Ill.

Continuation-in-part of Ser. No. 40,855, May 21, 1979, Pat. No. 4,355,584. This application Sep. 2, 1980, Ser. No. 183,053

Int. Cl.³ B60F *1/04*

U.S. Cl. 105—26 R **12 Claims**



1. A railcar moving vehicle comprising, in combination, first frame means having mounted thereon a plurality of road and rail wheels, engine and drive components, and an operator's cab, second frame means having a pair of couplers mounted thereon, one adjacent each end thereof for coupling with a railcar to be moved, said second frame means being carried on said first frame means and being vertically movable relative to said first frame means, whereby upon elevating said second frame means said coupler means may be raised beneath the coupler of a railcar to be moved thereby transferring a portion of the weight of such railcar to said second frame means, and means for raising and lowering said second frame means relative to said first frame means.

4,380,199

RAILROAD VEHICLE PEDESTAL WEAR LINER

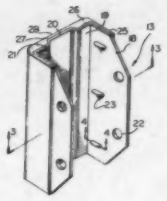
George A. Thomson, and Robert Haynes, both of Burlington, Canada, assignors to Thomson-Gordon Limited, Burlington, Canada

Filed Feb. 19, 1981, Ser. No. 235,833

Claims priority, application Canada, Sep. 18, 1980, 360679

Int. Cl.³ B61F *5/32;* **F16C** *27/02, 33/20*

U.S. Cl. 105—225 **3 Claims**



1. A railroad vehicle pedestal wear liner for attachment to the pedestal leg of a truck of a railroad vehicle which includes a journal box having a journal box wear plate facing said pedestal leg, said pedestal wear liner comprising a unitary metallic support structure generally U-shaped in cross section with a central web portion and a pair of mounting legs for mounting the pedestal wear liner on a pedestal leg; said central web portion having a pair of flat portions adjacent said mounting legs and a central flat portion outwardly offset from said pair of flat portions, means in each of said mounting legs for receiving fastening elements for securing said legs to the sides of a pedestal leg and a solid, hard, elastomeric urethane polomer forming a synthetic elastomer layer bonded to the outer face of said metallic support structure, said elastomer layer forming an outer flat wear surface across the entire central web of the metallic support and extending continuously over at least part of said mounting legs and filling openings in said legs to provide a mechanical interlock between the elastomer and the metallic support.

4,380,200

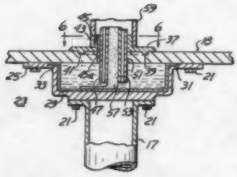
CANDLELAMP-TABLE

James D. Reninger, 115 Fiesole St., Venice, Fla. 33595

Filed Oct. 2, 1980, Ser. No. 193,203

Int. Cl.³ A47B *35/00*

U.S. Cl. 108—23 **9 Claims**



1. A candlelamp-table comprising:

(a) a horizontal top;

(b) means for supporting said top above a supporting surface;

(c) a reservoir carried by and beneath said top and adapted for holding liquid combustible fuel, said reservoir including an outer shell and a liner adapted for holding said fuel; and

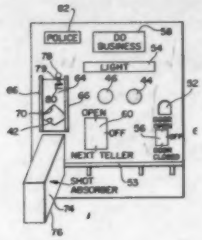
(d) a candlelamp removably supported on said top and having a wick extending upwardly and downwardly into said reservoir.

4,380,201

BANK CONSTRUCTION

Exsior Dion, 547 River Rd., Lincoln, R.I. 02865

Filed Mar. 10, 1981, Ser. No. 242,288
Int. Cl.³ E06B 9/04; E05G 5/02; G08B 13/00
U.S. Cl. 109—17 6 Claims



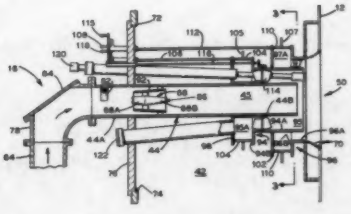
1. A constructional assembly for conducting improved banking transactions comprising a structure having a first area generally accessible to customers and a teller's work area, said areas separated from each other by a security wall, a plurality of separate, generally fully enclosed customer booths positioned along said security wall, each of said booths having access thereto by a door opening into said first area, said door closable and lockable from said teller's work area, signal means responsive to the closing of said door to signal a teller as to readiness to transact business, communication means between said teller and said customer, a portion of the security wall of said booth having a transaction passage therethrough, said passage mutually opening into said booth and said teller's area whereby business between the teller and the customer may be transacted, and means operable from the teller's area to close said passage, including teller operational control means for signalling a normal operational sequence including that the booth is available, that a customer is in the booth, that the booth door is closable, that the booth door is closed and locked and for opening said door and initiating another sequence.

4,380,202

MIXER FOR DUAL REGISTER BURNER

Albert D. LaRue, Uniontown, Ohio, and John J. Wolf, Havertown, Pa., assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Jan. 14, 1981, Ser. No. 224,985
Int. Cl.³ F23D 1/00
U.S. Cl. 110—263 7 Claims



1. An improved fuel burner having a tubular nozzle with an end plate attached thereto and a means for reducing the pressure loss though the nozzle and inhibiting the formation of nitric oxides, the means comprising; a deflector located downstream fuel flow-wise of the end plate and;

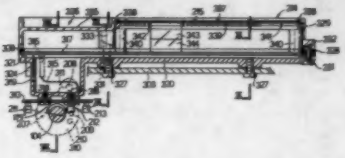
a diffuser disposed within said nozzle having a shroud and a plug located downstream fuel flow-wise of the deflector.

4,380,203

DEVICES GENERATING SYNCHRONIZING SIGNALS IN SEWING MACHINES

Nereo Bianchi, Pavia, Italy, assignor to NECCHI S.p.A., Pavia, Italy

Filed May 2, 1980, Ser. No. 146,126
Claims priority, application Italy, May 3, 1979, 42906 A/79
Int. Cl.³ D05B 3/02
U.S. Cl. 112—158 E 41 Claims



41. In a sewing machine having a needle bar means capable of transverse oscillation thereof relative to the direction of fabric feed in said sewing machine, feed means for adjusting the length and direction of said fabric feed, first actuator means for adjusting the transverse position of said needle bar means in response to control signals provided thereto, second actuator means for adjusting the positional displacement of said feed means in response to control signals provided thereto, rotatable main shaft means operatively connected to said needle bar means for enabling said transverse oscillation thereof, and main drive motor means drivingly connected to said main shaft means and said feed means for enabling sewing by said sewing machine; the improvement comprising means for generating a stop control synchronizing signal to said main drive motor means, said generating means comprising a first magnetic sensor means associated with said main drive motor means for providing said stop control synchronizing signal thereto, and a first magnet means disposed for synchronous rotation with said main shaft means for interacting with said first magnetic sensor means for a sufficient angular interval of rotation to enable stopping of said main shaft means in a predetermined arc of rotation of said main shaft means, wherein said generating means further comprises a soft iron loop substantially surrounding the area of interaction of said first magnet means and said first magnetic sensor means for facilitating closure of the magnetic path formed in said area and increasing the associated flux density within said area.

4,380,204

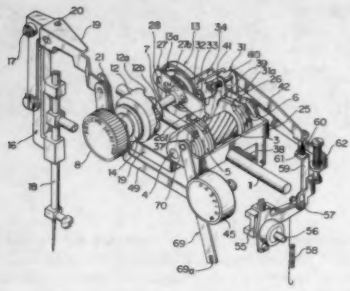
NEEDLE AND FEED CAM ARRANGEMENT FOR A ZIG ZAG SEWING MACHINE

Susumu Hanyu, Hachioji, and Akio Koide, Kokubunji, both of Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed Feb. 17, 1981, Ser. No. 235,136
Claims priority, application Japan, Feb. 20, 1980, 55-19737[U]
Int. Cl.³ D05B 3/02
U.S. Cl. 112—158 A 8 Claims

1. A sewing machine comprising a machine housing; a main drive shaft (1) rotatably mounted in said housing for vertically reciprocating a needle penetrating a fabric to produce stitches therein; a shaft (4) extending transverse to the main drive shaft and rotatably mounted in said housing; means (3) between said main drive shaft and the transverse shaft for rotating the latter at a speed smaller than the rotational speed of said main shaft; a plurality of pattern cams (5) and a plurality of feed control cams (6) mounted on said transverse shaft for rotation therewith; first transmission means (19) operatively connected to said needle and having a first follower (19a) adapted to cooperate with a selected one of said plurality of pattern cams for controlling lateral swinging movement of the needle; fabric feed regulator means (55) tiltably mounted in said housing for regulating the amount of movement of the fabric to be stitched

in forward and rearward direction; second transmission means (**42**, **42***d*, **42***e*) for controlling tilting of said feed regulator means, said second transmission means being operatively connected to said feed regulator means and including a second follower (**39**) adapted to cooperate with a selected one of said plurality of feed control cams; and manually adjustable select-



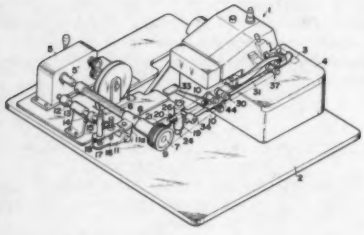
ing means (**8**, **7**, **12**, **13**, **14**) cooperating with said first and said second transmission means for moving said follower of said first transmission into cooperative engagement with a selected one of said pattern cams (**5**) and for moving said follower (**39**) of said second transmission means into cooperative engagement with a selected one of said feed control cams (**6**).

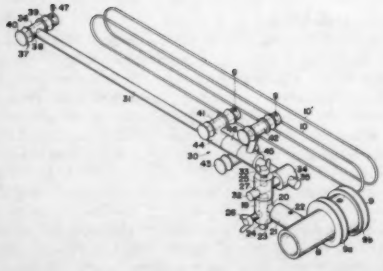
4,380,205

GUIDANCE APPARATUS FOR A SEWING MACHINE

Masatoshi Nagane, Gotenba, Japan, assignor to Kabushiki Kaisha Fujimi Hoseisho, Sunto, Japan

Filed Sep. 22, 1980, Ser. No. 189,303
Claims priority, application Japan, Jul. 23, 1980, 55-100910
Int. Cl.[3] **D05B** *27/00, 27/12*
U.S. Cl. 112—304 **6 Claims**





1. A guidance apparatus for a sewing machine having a variable-speed drive unit and a working table that permits overedge stitching said guidance apparatus comprising:

a shaft rotatably connected to said variable-speed drive unit at one end thereof;

a driving pulley connected to the other end of said shaft;

an L-shaped member pivotally connected to said shaft;

said L-shaped member being pivotable laterally and vertically relative to a plane of the working table of the sewing machine,

pulley means rotatably connected to one end of said L-shaped member,

a first means for locking the lateral movement of said L-shaped member,

a second means for locking the vertical movement of said L-shaped member, said second means being positioned higher relative to the axis of said driving pulley when said second means and said pulley are in their positions of intended use, and

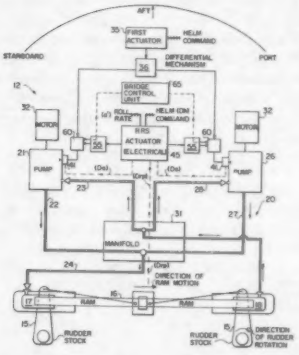
endless belt means operatively connecting said driving pulley with said pulley means.

4,380,206

SHIP ROLL STABILIZATION SYSTEM

A. Erich Baitis, Stafford, Va., and Dennis A. Woolaver, Rockville, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 25, 1981, Ser. No. 247,484
Int. Cl.[3] **B63B** *39/06*
U.S. Cl. 114—122 **7 Claims**



2. A ship stabilization system which utilizes the rudders to compensate for wave and wind induced roll motions, comprises:

a hydraulic control means connected to the rudders for controlling the position of the rudders;

flow control means connected to the hydraulic control means for controlling the flow of hydraulic fluid in the hydraulic control means to produce a predetermined rudder movement;

a roll rate sensor for producing roll rate signals (a'); and

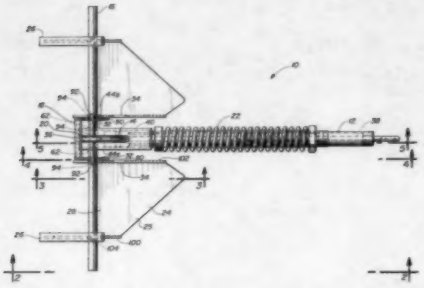
a roll reduction actuation means having a first input for receiving said roll rate signal and a second input for receiving helm steering command signals and being connected to the flow control means for forming a roll reduction control signal from said roll rate signal translating said helm steering command signals and said roll reduction control signals into a control impulse for the flow control means.

4,380,207

ANCHORING APPARATUS

Edwin B. Nolt, New Holland, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Sep. 2, 1981, Ser. No. 298,697
Int. Cl.³ B63B *21/24*
U.S. Cl. 114—298 **10 Claims**



1. In an anchoring apparatus having a housing; a support extending through said housing; a fluke movably mounted on said support for movement relative to said housing between a sea bed engaging position and a release position, the improvement comprising:

a cam assembly movably mounted on said support for movement between a first position and a second position, said cam assembly having a first portion extending through said housing and being movable relative to said fluke;

a cam roller resiliently mounted with said housing for movement toward and away from said cam assembly, said cam roller being engageable with said first portion of said cam assembly;

spring means connected to said roller to bias said roller into engagement with said first portion and for releasably holding said cam assembly in said first position;

actuating means connected to said cam roller and being selectively operable to effect movement of said cam roller away from said cam assembly to permit said cam assembly to move to said second position, the release of the operation of said actuating means to permit said spring means to urge said cam roller against the first portion of said cam assembly effecting the return of said cam assembly to said first position; and

limit means for limiting movement of said fluke relative to said cam assembly, said limit means being operable to permit said fluke to move to said release position when said cam assembly moves to said second position and to effect a movement of said fluke to said sea engaging position when said cam assembly moves from said second position to said first position.

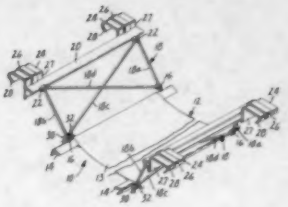
4,380,208

PORTABLE SEAT

Dean L. Goserud, 1981 Princeton Ave., St. Paul, Minn. 55105

Filed Jul. 6, 1981, Ser. No. 281,233
Int. Cl.³ B63B *17/00*
U.S. Cl. 114—363 **14 Claims**

5. A portable seat for suspension between spaced supports comprising a seating member having elongated rigid side edge portions, suspension means associated with and spaced outwardly from each said side edge portion, and a flexible element interconnecting each said suspension means with its associated side edge portion, each said rigid side edge portion having securing means on each end portion thereof and each said suspension means including securing means longitudinally spaced from one another, each said suspension means securing means having an element secured thereto for suspending the seat from a support, each said attached element being generally opposite the securing means of the associated side edge portion, said flexible element interconnecting each side edge portion and its associated suspension means being slidably threaded through each said securing means of each said side edge portion and its associated suspension means for varying



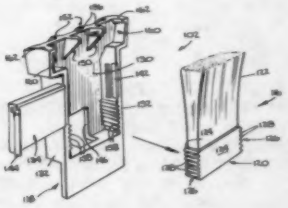
the distance between said side edge portion and its associated suspension means, and adjustable means engaging the end portions of said flexible elements to limit reverse passage of said flexible elements through said securing means and thereby adjustably fix the distance between each side edge portion and its associated suspension.

4,380,209

WORKPIECE MOISTENING APPARATUS

Robert R. Reid, Stamford, Conn.; Edward Winkler, Armonk, N.Y., and Stephen E. Girard, Milford, Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 21, 1981, Ser. No. 332,626
Int. Cl.³ B05C *1/06*
U.S. Cl. 118—253 **12 Claims**



1. Apparatus for applying moisture to a workpiece, said apparatus comprising:

a. a brush including a base and a moisture carrier extending therefrom, said moisture carrier having a free end for contacting a workpiece to apply moisture thereto, said base including a plurality of teeth; and

b. brush holding means including a plurality of teeth, said brush teeth and said brush holding means teeth respectively constructed and arranged for separable engagement with each other for removably attaching said brush to said brush holding means in one of at least two positions.

4,380,210

WORKPIECE MOISTENING SYSTEM

David R. Auerbach, Georgetown, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

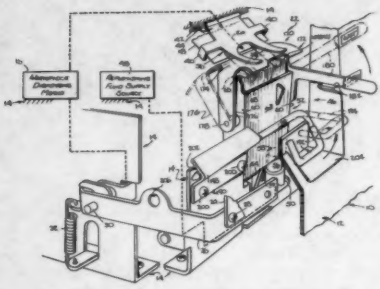
Filed Dec. 21, 1981, Ser. No. 332,627
Int. Cl.³ B05C *1/06*
U.S. Cl. 118—253 **8 Claims**

1. In a machine including framework and means for dispensing a moistenable workpiece, improved workpiece moistening means comprising:

a. a source of supply of moistening fluid, said supply having

an upper end and a lower end, means for pivotably attaching the lower end of said supply source to said framework;

b. means for moving the upper end of said supply source between a first position wherein said supply source is inaccessibly disposed and a second position wherein said supply source is accessibly disposed;



c. applicator means removably mountable in said supply source; and

d. means for disabling said moving means until said workpiece dispensing means is disabled.

4,380,211

VACUUM EVAPORATION SYSTEM FOR DEPOSITION OF THIN FILMS

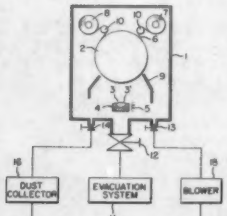
Koichi Shinohara, Kobe, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 3, 1981, Ser. No. 299,188

Claims priority, application Japan, Sep. 17, 1980, 55-129737

Int. Cl.³ C23C *13/10*

U.S. Cl. 118—718 **4 Claims**



1. A vacuum evaporation system for the deposition of thin films comprising:

a blower and dust collector in communication through valve means with an evacuated process chamber in which are disposed at least one set of a film substrate holder and an evaporation source whereby the gases in the evacuated process chamber can be filtered while the vacuum is maintained.

4,380,212

ARRANGEMENT FOR UNIFORMLY COATING SURFACES OF REVOLUTION BY VAPOR DEPOSITION IN A HIGH VACUUM

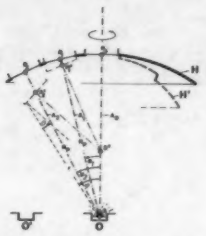
Thaddäus Kraus, Triesen, Austria, assignor to Balzers Aktiengesellschaft, Liechtenstein

Filed Sep. 3, 1981, Ser. No. 299,061

Claims priority, application Switzerland, Sep. 26, 1980, 7216/80

Int. Cl.³ C23C *13/08*

U.S. Cl. 118—720 **17 Claims**



1. An apparatus for uniformly coating a number of substrates with surfaces of revolution by vapor deposition in a high-vacuum container by means of at least one evaporative source for producing a vapor stream comprising a structure for supporting all the substrates to be coated which is rotatable about a fixed axis, and at least one corrective mask for intercepting the vapor stream and which also is rotatable about a fixed axis, wherein the apparatus is structured so that:

(a) all substrate axes (A_1, A_2) intersect at a single point (S);

(b) all substrate poles (P_1, P_2) are equidistantly spaced from the point of intersection (S) of the substrate axes;

(c) an axis of rotation (A_0) of the structure supporting the substrates passes through the point of intersection (S) of the substrate axes;

(d) an axis of rotation of the at least one corrective mask coincides with the axis of rotation (A_0) of the structure supporting the substrate, which structure rotates in opposite direction;

(e) the distance between the evaporative source and the point of intersection (S) of the substrate axes corresponds to less than 15% of the distance between the point of intersection (S) of the substrate axes and the substrate poles (P_1, P_2);

(f) the distance between the corrective mask and the substrates corresponds to less than 15% of the distance (R_p) between the point of intersection (S) of the substrate axes and the substrate poles (P_1, P_2); and

(g) the contour of the at least one corrective mask is determined empirically from the distribution of the vapor radiation in the container space, to the effect that on a spherical surface on which all the substrate poles are located, an even coating is produced.

4,380,213

ROTATABLE FISH CAGE

Albert Blair, and Patrick T. Grant, both of Aberdeen, Scotland, assignors to National Research Development Corporation, London, England

Continuation of Ser. No. 122,490, Feb. 19, 1980, Pat. No. 4,351,268. This application Jan. 26, 1982, Ser. No. 342,802

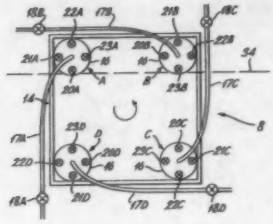
Claims priority, application United Kingdom, Feb. 21, 1979, 7906044

Int. Cl.³ A01K *61/00*

U.S. Cl. 119—3 **6 Claims**

1. A fish cage comprising perforated walls for the flow into or out of the cage of ambient water in which the cage will be located in use, said cage being substantially coincident with an

imaginary rectangular box having four long corner edges, a plurality of water-tight control devices disposed along the said four long corner edges which are coincident with the perforated walls of said cage and secured relative to said walls with at least one said control device being wholly immersed in the



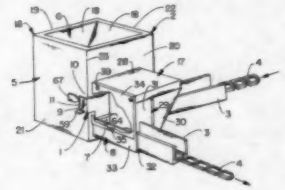
ambient water at any given moment, each said control device having inlet and outlet valve means for allowing ingress and egress of air and/or water to provide in situ control of the overall buoyancy and/or the flotation attitude of the cage thereby to allow buoyancy-controlled rotation of the cage.

4,380,214

FEED GATE FOR POULTRY CONVEYOR FEEDERS AND THE LIKE

William R. Williams, Roswell, Ga., assignor to U.S. Industries, Inc., New York, N.Y.

Filed Jan. 19, 1981, Ser. No. 226,414
Int. Cl.³ A01K *39/01*
U.S. Cl. 119—51 CF **12 Claims**



1. In a feeder unit for automated poultry systems and the like of the type having at least one feed conveyor with a moving feed carrier; said feeder unit comprising a housing through which said feed carrier translates, means for adding feed to a return area of said feed carrier, and an outlet trough disposed downstream of said feed adding means, the improvement of an adjustable feed gate comprising:

a valve plate having means for slidably mounting the same in said outlet trough for translation along a generally vertical plane; said valve plate having a lower, free edge disposed a preselected distance from the feed carrier in said output trough for metering the flow of feed from said feed adding means onto said feed carrier;

an adjustment tab attached to and moving with said valve plate; said adjustment tab extending laterally from said valve plate, and overlying an exterior surface of said feeder unit housing;

means for detachably anchoring said adjustment tab to said housing at selected vertical positions for varying the conveyor feed level from the exterior of said feeder unit; said anchoring means comprising:

a plurality of detents spaced along a side edge of said adjustment tab; and

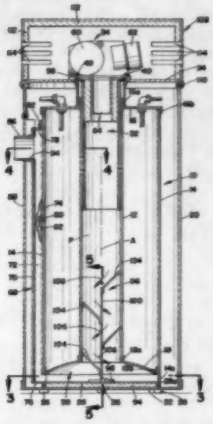
a stop fixedly attached to said housing and having a portion thereof shaped for mating reception in said detents, whereby said stop in conjunction with said adjustment tab detents both indicates the level setting of said feed gate, and interconnects said plate with said housing.

4,380,215

LIQUID FUEL-FIRED WATER HEATING TANK

Walton L. Mendelson, 3161 Yorkshire, Cleveland Heights, Ohio 44118

Filed Jul. 16, 1981, Ser. No. 284,064
Int. Cl.³ F22B *5/00*
U.S. Cl. 122—13 R **2 Claims**



1. A liquid fuel-fired water heating tank comprising housing means including an upwardly extending annular housing wall, an annular water receptacle in said housing means, said receptacle including radially spaced apart coaxial inner and outer side walls having corresponding upper and lower ends, said outer side wall being spaced inwardly from said housing wall, said receptacle further including annular upper and lower end walls, said upper end wall being between said upper ends of said side walls, said lower end of said outer side wall being spaced axially below said lower end of said inner side wall, said lower end wall of said receptacle being between said lower end of said inner side wall and said outer side wall at a location providing an axial portion of said outer side wall below said lower end wall, a planar bottom wall spaced below said lower end wall, said bottom wall extending transverse to the axis of said outer side wall and closing said lower end thereof, said lower end wall of said receptacle together with said planar bottom wall and said axial portion of said outer side wall defining a plenum chamber, said inner side wall opening downwardly into said plenum chamber and providing the only inlet passageway thereinto, combustion chamber means extending downwardly into said inner side wall of said receptacle from said upper end thereof, liquid fuel-fired burner means including burner tube means, means supporting said burner means above said upper ends of said inner and outer receptacle side walls with said burner tube means extending downwardly into said combustion chamber means, whereby combustion gases from combustion of fuel in said combustion chamber means during operation of said burner means flow downwardly from said combustion chamber means and through said inner side wall means of said receptacle therebelow into said plenum chamber, exhaust flue means including circumferentially spaced apart flue side walls extending upwardly along the outer surface of said outer side wall of said receptacle and an outer flue wall between said flue side walls and spaced radially outwardly from said outer surface of said outer side wall of said receptacle, said exhaust flue means having a circumferentially narrow inlet end opening radially into said plenum chamber through said axial portion of said outer side wall of said receptacle and

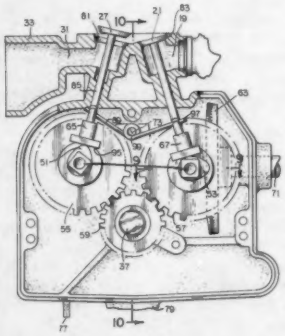
an outlet end adjacent said upper end of said outer side wall of said receptacle and opening radially outwardly through said housing wall, said exhaust flue means providing the only exhaust passageway for combustion gases from said plenum chamber and said inlet end of said exhaust flue means restricting flow of said combustion gases from said plenum chamber into said exhaust flue, removable baffle means including a support member having a lower end resting on said planar bottom wall of said plenum chamber, said support member extending upwardly into said inner side wall of said receptacle, a plurality of baffle plates axially spaced apart on said support member along the length thereof, axially adjacent ones of said baffle plates being on opposite sides of said support member, said baffle plates being inclined downwardly and radially inwardly of said inner side wall of said receptacle, the lowermost one of said baffle plates being inclined downwardly and radially inwardly in the direction away from said inlet end of said exhaust flue, said means supporting said burner means including means removably mounting said burner means and said combustion chamber means on said water receptacle, and said combustion chamber means including coaxial first and second tubular portions of refractory material, said first portion surrounding said burner tube means and said second portion extending downwardly into said passageway from said first portion.

4,380,216

ECONOMICAL ENGINE CONSTRUCTION

William C. Kandler, New Holstein, Wis., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Sep. 17, 1980, Ser. No. 188,135
Int. Cl.³ F01L 3/10
U.S. Cl. 123—90.65 **20 Claims**



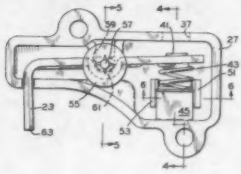
1. In an internal combustion engine having a valve train including a pair of stems and valves connected to each of the stems for controlling intake and exhaust ports respectively of the engine, cams for imparting reciprocating opening motion to each valve by way of the valve train, and a spring for biasing the valves closed and the valve train into tracking relation with the cams, the improvement wherein the spring comprises a coiled wire spring having an anchored central bight portion and outwardly extending legs, each engaging one of the pair of stems to urge the respective valves toward a closed position, the cams for imparting reciprocating motion comprising a pair of non-metallic radial cam surfaces shaft driven by a like pair of non-metallic spur gears, the cams being driven by a common spur gear fixed to the crankshaft of the engine which gear meshes with each of the like pair of gears.

4,380,217

BREAKER POINT SYSTEM

Anthony E. Wasmer, and Stephen L. Koenigs, both of New Holstein, Wis., assignors to Tecumseh Products Company, Tecumseh, Mich.

Filed May 18, 1981, Ser. No. 264,976
Int. Cl.³ F02P 17/00, 1/00
U.S. Cl. 123—146.5 A **25 Claims**



1. In an internal combustion engine ignition system, an improved contact point assembly for following a rotating cam member and periodically interrupting ignition coil primary winding current flow inducing a high voltage ignition spark producing surge in a secondary ignition coil winding comprising:

an electrically insulating housing;

a fulcrum within the housing;

a lever arm within the housing having an electrical contact near one end thereof and with the other end extending beyond the housing to engage the cam member;

a threaded member passing into the housing and comprising an adjustable stationary contact; and

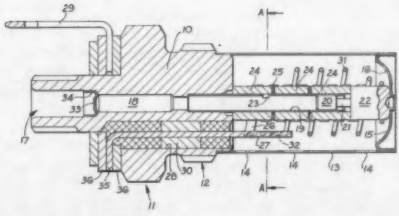
a spring for urging the lever arm into engagement with the fulcrum, the lever arm contact toward the stationary contact, and the lever arm other end into engagement with the cam member.

4,380,218

STARTING AID FOR INTERNAL COMBUSTION ENGINES

Malcolm W. Munro, London, England, assignor to Lucas Industries Limited, Birmingham, England

Filed May 7, 1981, Ser. No. 261,474
Claims priority, application United Kingdom, Jul. 2, 1980, 8021633
Int. Cl.³ F02N 17/00
U.S. Cl. 123—179 H **9 Claims**



1. A starting aid for assisting the starting of an internal combustion engine and of the kind which is located in the air inlet manifold of the engine and to which liquid fuel is supplied, the fuel being vapourised and ignited so that a flame is produced which heats the air flowing to the engine, the aid comprising a tubular body which is closed at one end, a fuel inlet to the other end of the body, a stack of electrically insulating rings mounted about the body defining narrow gaps therebetween, said rings being formed from a material which can withstand high temperature, an electrical heating element wound about said rings, an aperture in the wall of said body

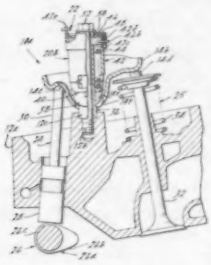
and through which fuel can flow to the peripheral surfaces of said rings by way of the gaps therebetween, said element acting to vapourise the fuel and means for igniting the vapourised fuel.

4,380,219

VALVE DISABLING MECHANISM

Michael M. Walsh, Northville, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 16, 1975, Ser. No. 578,295
Int. Cl.³ F02D *13/06*
U.S. Cl. 123—198 F **36 Claims**



1. A device for changing the fulcrum of an engine valve rocker arm to selectively disable and enable the valve, said device comprising:

support means adapted for attachment to the engine;

fulcrum means slideably mounted on said support means, said fulcrum means defining a pivot surface adapted to contact said valve rocker arm;

first means mounted for sliding movement with said fulcrum means and retained against rotation relative to said support means, said first means defining a first abutting surface;

second means rotatably mounted on said support member and retained against sliding movement relative to said support means, said second means defining a second abutting surface for contacting said first abutting surface and adapted to react engine valve drive train forces which effect normal opening of the engine valve; and

actuation means selectively operative to apply a force to rotate said second means to a valve enabling position drivingly connecting said abutting surfaces for effecting normal valve opening and closing in response to engine valve train driving forces and selectively operative to apply a force to rotate said second means to a valve disabling position drivingly disconnecting said abutting surfaces for effecting disablement of said valve by allowing movement of said surfaces relative to each other in response to the valve train driving forces.

4,380,220

INTERNAL COMBUSTION ENGINE

James R. Gurley, Rte. 5, Box 42, Rutherfordton, N.C. 28139

Continuation-in-part of Ser. No. 5,964, Jan. 24, 1979, Pat. No. 4,277,506. This application Sep. 22, 1980, Ser. No. 189,309
Int. Cl.³ F02B *53/00*
U.S. Cl. 123—226 **17 Claims**

1. An internal combustion engine comprising:

(a) a housing defining an internal compartment having at least one peripheral lobe;

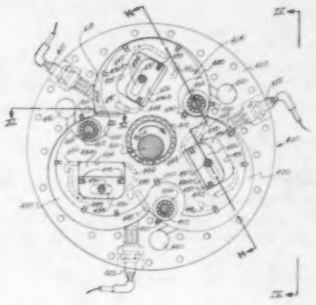
(b) an inner body having at least one peripheral lobe thereon, means mounting said inner body in said compartment for non-rotational, orbital movement with said inner body lobe disposed for movement within said housing lobe during at least a portion of orbital movement;

(c) an opening located in said inner body inwardly of the periphery thereof, a movable wall member disposed in said opening, and means mounting said movable wall member for movement in said opening;

(d) portions of at least certain of movable wall member, inner body, and housing cooperatively defining a fluid intake and compression chamber, a variable-volume power chamber, and a variable-volume fluid exhaust chamber in said compartment during at least a portion of orbital movement of said inner body;

(e) intake port means and exhaust port means in said housing communicating with said compartment;

(f) passageway means comprising:



(1) said intake and compression chamber with said intake port means;

(2) said intake and compression chamber with said power chamber; and

(3) said exhaust chamber with said exhaust port means during at least some portions or orbital movement of said inner body; and

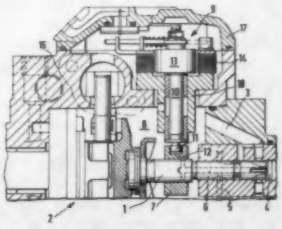
(g) a power output shaft, and means operatively connecting said inner body with said power output shaft to impart rotational movement thereto during orbital movement of said inner body.

4,380,221

REGULATING DEVICE FOR A FUEL INJECTION PUMP

Franz Eheim, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Fed. Rep. of Germany

Filed Feb. 5, 1981, Ser. No. 231,654
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1980, 3004035
Int. Cl.³ F02M *59/20*
U.S. Cl. 123—343 **17 Claims**



1. A regulating device for the supply amount of a fuel injection pump for internal combustion engines including a housing, a fuel injection pump suction chamber in said housing, a pump piston, a pump operation chamber, a relief channel in said pump piston which extends to said pump operation chamber,

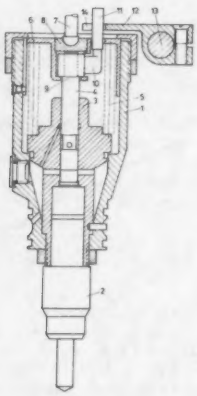
an annular slide operative on said piston for opening and closing said relief channel in said piston, a quantity control element fastening to said pump housing and including a rotary magnet having an axis and further including means connecting said axis to said annular slide to move said annular slide axially on said pump piston to regulate fuel supply onset or end thereof by opening or closing said relief channel of said pump operation chamber, and an adjustment means positioned relative to said quantity control element for moving said quantity control element for adjustment of its position relative to said annular slide while said engine is running.

4,380,222

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

Anton Pischinger, Graz, Austria, assignor to Friedmann & Maier Aktiengesellschaft, Hallein, Austria

Filed Oct. 15, 1980, Ser. No. 197,240
Claims priority, application Austria, Oct. 15, 1979, 6716/79
Int. Cl.³ F02D 31/00
U.S. Cl. 123—365 3 Claims



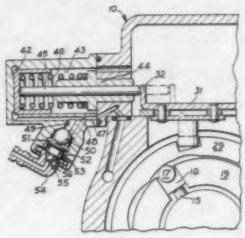
1. Fuel injection pump for internal combustion engines operated with fuel injection in particular Diesel engines, of the type in which fuel injection pump and fuel injection nozzles are integrated to a constructional unit associated to one engine cylinder, the pump having a housing and an internal pump piston rotatable via a regulating member by a drive member for adjusting the amount of fuel injected and being loaded by a return spring acting on the pump piston against the action of a piston drive member with interposition of a spring washer, the regulating member being formed of a crank having a crank pin parallely extending relative to the piston axis and being rigidly connected to the piston or manufactured for forming with the piston one single piece, the crank being arranged at the driven end of the piston between drive member and spring washer, and a control rod acting on the crank pin, characterized in that the crank pin protrudes through an aperture in the front end of the housing at the area of the driven end of the piston, said aperture facing parallel to the direction of the axis of the piston, said crank pin being engaged by the control rod arranged outside of the constructional unit formed of fuel injection pump and fuel injection nozzle.

4,380,223

LIQUID FUEL INJECTION PUMPING APPARATUS

John R. Jefferson, Rainham, and Robert T. J. Skinner, High Wycombe, both of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Jan. 30, 1981, Ser. No. 230,270
Claims priority, application United Kingdom, Feb. 14, 1980, 8004951
Int. Cl.³ F02M 59/30
U.S. Cl. 123—383 4 Claims



1. A liquid fuel injection pumping apparatus for supplying fuel to a turbo supercharged compression ignition engine and of the kind comprising a housing, a rotary distributor member located in the housing and adapted, in use, to be driven in time relationship with an associated engine, a reciprocable pump plunger located in a bore in the distributor member, a cam located in the housing for imparting inward movement to the plunger as the distributor member rotates, means for feeding fuel to the bore to effect outward movement of the plunger, passage means for conveying fuel from the bore to an outlet during inward movement of the plunger, a movable member operable, in use, to determine the maximum outward movement of the plunger, means responsive to the pressure of air delivered to the associated engine, in use, for determining the setting of said movable member, said pressure responsive means comprising a piston housed within a cylinder, means coupling said piston to said movable member, a source of liquid under pressure, a conduit connecting said source to said cylinder, and valve means operable to control the liquid pressure in said cylinder and, in use, being responsive to the pressure of air supplied to the associated engine, a restrictor in said conduit, said conduit being connected to said cylinder downstream of said restrictor, said valve means acting to control the flow of liquid from downstream of said restrictor to a drain and comprising a seating, a valve member, resilient means acting on said valve member to urge the valve member into contact with said seating against the action of the pressure downstream of said restrictor, and pressure responsive means subjected, in use, to the pressure of air supplied to the engine, the force exerted on said pressure responsive means by the air pressure acting to assist the action of said resilient means.

4,380,224

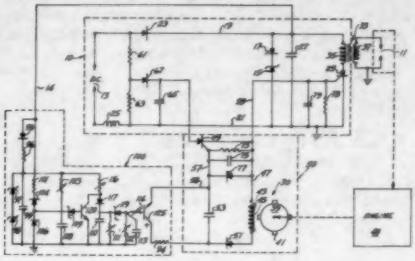
IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Howard E. Van Siclen, Jr., Unadilla, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jul. 31, 1981, Ser. No. 288,720
Int. Cl.³ F02P 5/04
U.S. Cl. 123—602 9 Claims

1. In combination with a internal combustion engine ignition system having at least one spark plug, means for firing the spark plug including a first solid state electronic switching device, and a triggering circuit for switching the first electronic switching device for firing the spark plug comprising: a second solid state electronic switching device, pulse generating means for generating a succession of electrical trigger pulses in timed relation to the speed of the engine crankshaft to

trigger the second switching device electrically conductive which switches the first switching device conductive, means for biasing the second switching device, and means for automatically controlling the voltage of the bias means, the improvement wherein the means for controlling the bias means comprises:



a transistor connected in parallel with said voltage biasing means; and

means for operating said transistor in the active region of its operating characteristics wherein its resistance varies.

4,380,225

VEHICLE ENGINE IGNITION SYSTEM UTILIZING LIGHT GUIDES FOR PROTECTION AGAINST INTERFERENCE

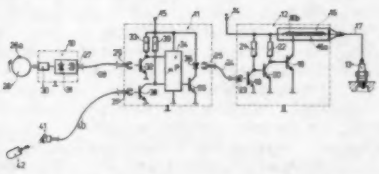
Jurgen Wesemeyer, Nuremberg; Georg Haubner, Berg, and Werner Meier, Rednitzhembach, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 18, 1981, Ser. No. 235,566

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1980, 3008066

Int. Cl.³ F02P *1/00, 1/00, 5/04, 5/06*

U.S. Cl. 123—613 8 Claims



1. In a motor vehicle ignition system having an ignition coil (16) an ignition system comprising:

light responsive switch means (18, 19, 20) in the vicinity of said ignition coil connected to said ignition coil for interrupting flow therethrough in response to a light signal;

control circuit means (11) in a vehicle location remote from said switch means for generating a light signal at desired ignition time instants;

and light guiding photoconductor means (24) for leading light of said light signal generated in said control circuit means over a path provided by said photoconductor means to said light responsive switch means, whereby signal transmission from said control circuit means to said switch means is immune to electromagnetic and electrical interference active in the space between said control circuit means and the vicinity of said ignition coil.

4,380,226

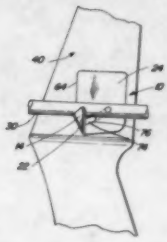
WINGED ARROW REST

Charles A. Saunders, Columbus, Nebr., assignor to Saunders Archery Company, Columbus, Nebr.

Filed May 29, 1981, Ser. No. 268,629

Int. Cl.³ F41B *5/00*

U.S. Cl. 124—41 A 8 Claims



1. An arrow rest for use in an archery bow having a rigid mid-section including a sidewall,

said arrow rest comprising

substantially planar vertically extending panel means for attachably securing said arrow rest to the bow,

bonding means for fastening said panel means continuously to the bow on a sidewall thereof,

winged means for supporting an arrow shaft resting thereon,

said winged means having a top bearing edge for supporting an arrow shaft thereon, said edge projecting laterally outwardly and rearwardly from said panel means,

hinge means pivotally and resiliently securing said wing means to said panel means at a generally vertically extending juncture of said wing means with said panel,

said hinge means defining a hinge line angled upwardly and forwardly from a base of the juncture of said winged means with said panel means,

said bearing edge of said winged means adapted to support the arrow shaft of an arrow riding thereon and stressing downwardly thereagainst,

weight and frictional forces applied to said winged means by an arrow shaft riding forwardly therealong on said bearing edge thereof causing said winged means to pivot yieldingly and resiliently forwardly on said hinge means,

pivotal forward movement of said winged means about said upwardly and forwardly projecting hinge line of said hinge means, due to frictional drag of an arrow being projected, effecting a simultaneous downward displacement of said arrow-shaft-supporting bearing edge of said winged means away from a general center line of an in-place arrow to reduce frictional drag against an arrow shaft riding on said bearing edge and facilitating and promoting true flight of the arrow upon propulsion thereof from the bow.

4,380,227

GRINDING WHEEL DRESSING APPARATUS

Nils Hoglund, #408B, 100 E. Linton Blvd., Delray Beach, Fla. 33444

Filed May 20, 1982, Ser. No. 380,081

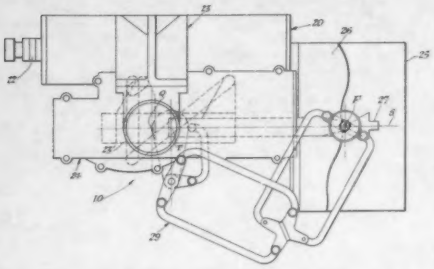
Int. Cl.³ B24B *53/08*

U.S. Cl. 125—11 PT 1 Claim

1. In an apparatus for forming contours on a grinding wheel having a support, a housing pivotally mounted on said support, two slides mounted in said housing movable parallel to each other, a tool pivotally mounted on one of said slides, a follower pivotally mounted on the other of said slides, a pivot member mounted on each of said slides and said housing, a first link mechanism connected to said pivot member for pivotally connecting said slides and said housing to determine relative linear movement of said slides, a template mounted on said support,

said follower being adapted to contact said template, the pivot axis of said housing, said tool and said follower lying in the same plane, a second link mechanism connecting said follower and said tool for controlling pivotal movement of said tool, the improvement in said first link mechanism comprising:

a first link pivotally connected at one end to said pivot member mounted on said follower carrying slide;



a second link pivotally connected to said pivot member mounted on said housing and the other end of said first link; and

a third link pivotally connected to said pivot member mounted on said tool-carrying slide and the mid-portion of said second link.

4,380,228

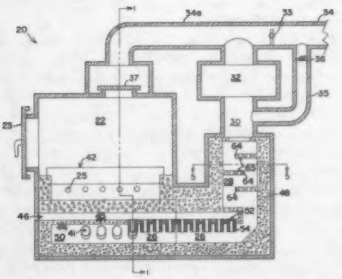
SUSTAINED IGNITION SECONDARY COMBUSTION UNIT

Leslie B. Crowley, 3 Hamor Pl., Bar Harbor, Me. 04609

Filed Apr. 21, 1981, Ser. No. 256,036

Int. Cl.³ F24B *5/00*

U.S. Cl. 126—76 **32 Claims**



1. A sustained ignition secondary combustion unit for the secondary combustion of smoke products from primary fuel burning, either as a built in or retrofitted component of a furnace or stove or as a self contained separate unit comprising:

first level means for conducting secondary air comprising a secondary air inlet and channel;

second level means for conducting smoke products from primary fuel burning comprising a smoke products inlet and channel, secondary combustion zone, and exhaust outlet, said outlet defining the direction of flow of secondary combustion products;

partition means separating the levels comprising a high temperature material, said partition formed with openings communicating between the levels in the area of the secondary combustion zone;

said openings between the levels being substantially surrounded or bounded by a high temperature porous or fiber-like material having surface area portions contacting the secondary air from the first level and smoke products from the second level whereby said porous or fiber-like material may be maintained at a sufficient temperature by contact and combustion of secondary air and smoke products which diffuse into the porous or fiber-like material for sustaining ignition and secondary combustion of smoke products in the second level in the vicinity of the porous or fiber-like material, and for producing high temperature products of secondary combustion in the second level at the secondary combustion zone and downstream in the exhaust outlet direction.

4,380,229

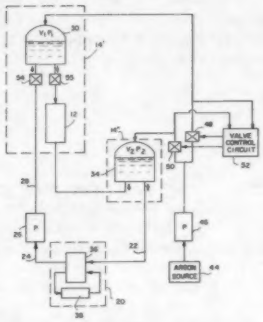
SOLAR RECEIVER PROTECTION MEANS AND METHOD FOR LOSS OF COOLANT FLOW

Lyle E. Glasgow, Westlake Village, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 24, 1980, Ser. No. 209,921

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—418 **9 Claims**



3. In a solar energy collection system having at least one solar receiver for coupling reflected solar energy to a fluid passing through said solar receiver, a reflecting means for reflecting said solar energy to said solar receiver, a heat transfer means for removing thermal energy from said fluid after having passed through said solar receiver, a conduit means for transporting said fluid between said solar receiver, said heat transfer means, and back to said solar receiver, and a pump means for causing said fluid to flow through said conduit means, a protection means for preventing said solar receiver from overheating said fluid should said pump means become inoperative comprising:

a first fluid storage means in fluid communication with said conduit means for storing a portion of said fluid prior to its passing through said solar receiver;

a second fluid storage means in fluid communication with said conduit means for storing a portion of said fluid subsequent to its passing through said solar receiver; and

means for maintaining a pressure differential between fluid stored in said first storage means and said second storage means whereby fluid will flow from said first storage means, through said solar receiver, and into said second storage means for a predetermined time after said pump means become inoperative.

4,380,230

SCALP MASSAGING APPARATUS

Arden Williams, 3993 Plumcrest Cir., Smyrna, Ga. 30080

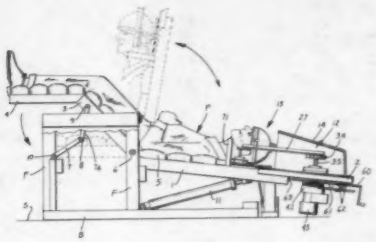
Filed Jul. 13, 1981, Ser. No. 283,090

Int. Cl.³ A61H *7/00*

U.S. Cl. 128—49 **5 Claims**

1. A scalp massaging apparatus comprising a pair of separate

complementary relatively movable helmet sections having sponge-like inner surfaces and arranged to receive the head of the user, yieldable biasing means arranged to bias said helmet sections toward each other and toward the head of the user, vibratory driving means mounted on a couch-like structure arranged to support the body of the user in a reclined position during use of the apparatus and including a pair of reciprocatory driving rods respectively interconnected with said helmet sections and effective to impart reciprocatory movement thereto thereby to massage the scalp of the user, an eccentric



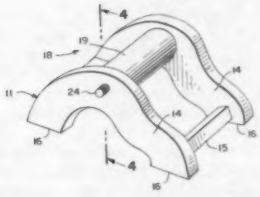
driving element mounted on said couch-like structure and interconnected with each of said driving rods near one end thereof, each of said driving rods being pivotally connected at the other end thereof to a support link pivotally mounted on a support block mounted on a part of said couch-like support structure, said support blocks are movably mounted on said couch-like support structure, and an adjusting crank threadedly related with said support blocks so as to impart adjusting movement thereto thereby to accommodate different head sizes.

4,380,231

FOOT EXERCISER

Frank Rocha, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Jan. 29, 1981, Ser. No. 229,764
Int. Cl.³ A63B *23/04*
U.S. Cl. 128—57 **1 Claim**



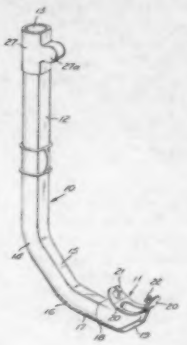
1. A foot exerciser, comprising in combination, a stand and a roller supported rotatably free on said stand, and means whereby said roller is eccentrically adjustable respective to a rotational axis thereof wherein said stand is comprised of a pair of inverted generally U-shaped legs each of which has a foot at each end for standing on a floor, and a pair of cross bars between said legs; said roller being supported between said legs, wherein a pair of axially aligned screws supported rotatably in said legs are each screw engaged on a rectangular block in an angularly inclined hole in said roller.

4,380,232

WHISTLE ATTACHMENT FOR A SNORKEL, AND SNORKEL-WHISTLE UNIT

James J. Doyle, 699 NE. 164th St., Miami, Fla. 33162

Filed May 14, 1981, Ser. No. 263,496
Int. Cl.³ A62B *7/00*
U.S. Cl. 128—201.11 **6 Claims**



1. On a snorkel having a generally J-shaped tube with a return bend at its lower end and a mouthpiece at the extremity of said return bend, said tube defining a passage extending continuously from said mouthpiece to its upper end, the improvement which comprises:

means forming a side opening in said tube near its upper end communicating with said passage;

a breath actuated whistle mounted on one side of said tube near its upper end and having an inlet opening registering with said side opening and thereby communicating with said passage through said tube;

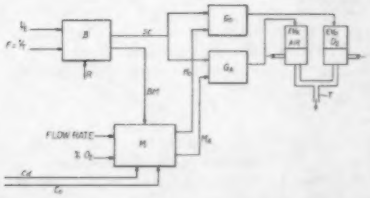
said tube terminating at its upper end in an unobstructed opening leading up from its passage and extending across substantially the full width of said passage to permit the user to expel water which accumulates in the lower end of the snorkel by flowing into the mouthpiece, and said opening being closable by the user's hand to direct the user's breath into the whistle when the user blows into the mouthpiece.

4,380,233

CONTROL DEVICE FOR AN ARTIFICIAL RESPIRATOR

Luc Caillot, Paris, France, assignor to Synthelabo, Paris, France

Filed Dec. 30, 1980, Ser. No. 221,469
Claims priority, application France, Jan. 4, 1980, 80 00096
Int. Cl.³ A61H *31/00*
U.S. Cl. 128—204.21 **4 Claims**



1. Control device for an artificial respirator, comprising: a solenoid-controlled valve for air and a solenoid-controlled valve for oxygen, both of said valves being of the variable flow type as a function of the plunger travel, and discharging into a manifold; a timebase circuit for fixing both the respiratory frequency and the ratio I/E of the inhalation time to the exha-

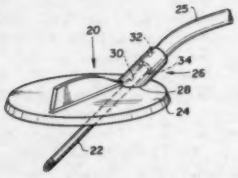
lation time during each period; a mixer for fixing both the overall respiratory flow and the proportion of oxygen in the gas supplied by the regulator; and two signal generators each linked to and controlling the opening of an associated solenoid-controlled valve; the timebase circuit output being connected to inputs of said generators in order that they may control the opening of the valves during the inhalation time, the generators being further connected to respective outputs of the mixer for receiving signals corresponding to the extent of opening of the valves during the inhalation period, the mixer being connected to the timebase circuit for receiving a signal therefrom corresponding to the ratio I/E to correspondingly adjust signals proportional to respiratory flow and oxygen proportion, whereby the valves are opened to an extent such that during the inhalation period, each valve allows a quantity of gas to pass which corresponds to the mean flow rate during the period.

4,380,234

INFUSION NEEDLE ATTACHMENT

Dean Kamen, Hooksett, N.H., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Aug. 16, 1979, Ser. No. 67,058
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—180 **4 Claims**



1. In combination with an infusion needle for achieving subcutaneous placement thereof incident to the dispensing therethrough of a medicament to a patient, an infusion needle attachment comprising a disk-like body of a selected size adequate for delineating an operative area for making provision for the handling and for the positioning of said infusion needle, a hollow tubular member bounding a compartment for receiving said infusion needle disposed in a peripheral location in said operative area and at an angular orientation in relation thereto so as to cause an infusion needle seated in said compartment to project at said angular orientation in depending relation from beneath said body, and an upstanding flap of a foldable construction material foldably attached to said body along a line coincident with the center of said body and in aligned relation to said projecting infusion needle, said flap being in a medial location of said operative area and extending in spanning relation from said tubular member to a point adjacent a peripheral edge of said body so as to effectively serve as a finger grip during said subcutaneous placement of said infusion needle, whereby said aligning orientations of said flap and infusion needle contributes to the proper guiding of said infusion needle into said required subcutaneous position thereof with said body in covering relation thereover masking the presence of said position needle.

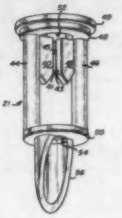
4,380,235

METERED DROP DISPENSERS

Hal C. Danby, Palo Alto, Calif., assignor to Anatros Corporation, Palo Alto, Calif.

Filed May 1, 1981, Ser. No. 259,436
Int. Cl.³ A61M *5/00*; B65D *47/18*
U.S. Cl. 604—251 **7 Claims**

1. In a metered drop dispenser device which includes a liquid reservoir, a drop forming means connected to the reservoir having an orifice at which drops of the liquid can be formed, a drop chamber coupled to the drop forming means through which drops fall and in which drops accummulate, a discharge device coupled to the bottom of the drop chamber for conveying the liquid to a utilization means, a metering means associated with the drop chamber for determining the



drop rate, and drop rate control means to vary the drop rate, the improvement in the drop forming means comprising:

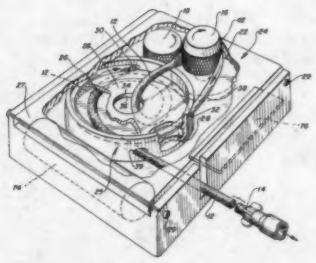
a pair of coplanar and spaced apart plate members having substantially parallel, planar facing end walls.

4,380,236

FLUID PUMP

William W. Norton, Lincolnshire, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Sep. 14, 1981, Ser. No. 301,677
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—151 **34 Claims**



1. Apparatus for the administration of solution at a precisely controlled rate, which comprises a length of flexible, collapsible tubing filled with said solution and connectable at one end to a conduit communicating with the vascular system of a patient, roller means for gripping and squeezing said tubing, means for rotating said roller means to advance the tubing therethrough, to expel said solution through said one end at a rate proportional to the rate of advancement of the tubing through the roller means, said means for rotating the roller means comprising a shaft carrying a roller of the roller means, an arm extending normally of said shaft and carried thereby to rotate said shaft and roller means as the arm is moved in one direction, clutch means to prevent back rotation of said shaft as the arm is moved in a direction opposite to the one direction, a motor, and cam means rotatable by said motor and positioned to engage said arm, to movingly reciprocate said arm back and forth in said one and opposite directions.

4,380,237

APPARATUS FOR MAKING CARDIAC OUTPUT CONDUCTIVITY MEASUREMENTS

Ronald S. Newbower, Acton, Mass., assignor to Massachusetts General Hospital, Boston, Mass.

Continuation of Ser. No. 99,710, Dec. 3, 1979, abandoned. This application Aug. 17, 1981, Ser. No. 293,198

Int. Cl.³ A61B *5/02*

U.S. Cl. 128—693 **12 Claims**

1. Apparatus for measuring the conductivity of vascular fluids within a vessel comprising:

a catheter having a predetermined diameter to fit within said vessel;

conductivity sensing means comprising at least two pairs of electrodes disposed on said catheter for contacting vascular fluids;

said electrodes comprising elongated conductive elements spaced apart by a predetermined distance which is both smaller than the diameter of the catheter and sufficiently small to reduce measurement fluctuations due to the fluid boundaries at the vascular walls, said conductive elements further having a length which is both larger than said predetermined distance and sufficiently large to reduce measurement fluctuations due to red blood cell density fluctuations;

means for supplying a known AC current between the electrodes of a first pair of electrodes; and

means for measuring the voltage between the electrodes of the second pair in order to provide a measure of the conductivity of nearby vascular fluids.

4,380,238

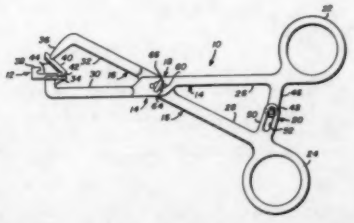
DISPOSABLE APPLICATOR FOR MINI-LAPAROTOMY USING A CLIP METHOD

Bartholomew A. Colucci, Half Moon Bay, Calif., and Pierre Comte, Waldenburg, Switzerland, assignors to Institute Straumann, Waldenburg, Switzerland

Filed Aug. 21, 1981, Ser. No. 294,915

Int. Cl.³ A61B *17/00*

U.S. Cl. 128—346 **7 Claims**



1. A disposable applicator for surgical tubal occlusion clips comprising:

a grasping lever for holding a hook portion of a Bleier tubal occlusion clip firmly in position, said grasping lever including in a substantially linearly attached manner, a loop handle, a grasping lever arm, a hinge area, a jaw arm, and a grasping jaw means, said grasping jaw means being formed in a shape to slidably receive the hook portion of a tubal occlusion clip and to restrict the motion of the hook portion received therein except along the slide axis;

a guiding lever for guiding and forcing a projection portion of said tubal occlusion clip from a disengaged mode to an engaged mode with regard to the hook portion, the guiding lever including, in a substantially linearly attached manner, a loop handle, a guiding lever arm, and a guide arm containing a depression at the end thereof for lightly gripping the projection portion of the tubal occlusion clip and guiding the projection portion from a uniform open position to a closed position;

hinge means connecting the grasping lever and the guiding lever and providing a mutual fulcrum for the levers; and

restrictor means interposed between the grasping lever and the guiding lever for limiting both the maximum and minimum separation of the hook portion and said projection portion of the tubal occlusion clip held therebetween.

4,380,239

INTUBATION OF LACRIMAL DUCTS

John S. Crawford, and Roy Wainman, both of Toronto, Canada, assignors to The Hospital For Sick Children, Toronto, Canada

Continuation of Ser. No. 104,793, Dec. 20, 1979, abandoned. This application Oct. 7, 1981, Ser. No. 309,527

Int. Cl.³ A61M *27/00*

U.S. Cl. 604—28 **8 Claims**

1. A probe set for use in the canaliculus intubation of the lacrimal duct, the probe set comprising:

a probe of a light wire which can be readily deflected through an angle of at least 90 degrees to permit the probe to pass from the nasolacrimal duct to the nasal inferior meatus, the probe having an enlarged end portion which is rounded to limit the possibility of damage to tissue when the probe is inserted; and

a very flexible tube of minimal rigidity having a first end containing an end of the probe remote from the end portion and having an outside diameter comparable to that of the end portion so that in use as the probe is inserted the enlarged end portion minimises damage to tissue and can be used to pull this end from the nasal passage to thereby draw the tube into the lacrimal duct.

4,380,240

APPARATUS FOR MONITORING METABOLISM IN BODY ORGANS

Frans F. Jöbsis; Johannes H. Keizer, and Ronald F. Overaker, all of Durham, N.C., assignors to Duke University, Inc., Durham, N.C.

Continuation-in-part of Ser. No. 188,578, Sep. 18, 1980, Pat. No. 4,321,930, which is a continuation-in-part of Ser. No. 810,777, Jun. 28, 1977, Pat. No. 4,281,645, and Ser. No. 17,727, Mar. 5, 1979, Pat. No. 4,223,680, which is a continuation-in-part of Ser. No. 810,777, Jun. 28, 1977, Pat. No. 4,281,645. This application Aug. 3, 1981, Ser. No. 289,413

Int. Cl.³ A61B *5/00*

U.S. Cl. 128—633 **5 Claims**

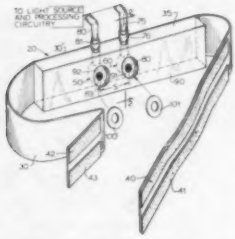
1. In a spectrophotometric reflectance apparatus for measuring in situ, in vivo, non-invasively, atraumatically, harmlessly, rapidly and continuously a local metabolic oxygen dependent

activity of a selected portion of the body where such activity bears a measurable relation to an oxygen dependent absorption characteristic of the selected portion for a particular wavelength of light transmitted therethrough having:

(a) circuitry means including:

(i) a plurality of near-infrared light sources located external of the body and having light emissions of different wavelengths in the 700–1300 nanometer spectral range and of an intensity below the level damaging to the body and said selected portion but sufficient to be detectable by a light sensor after transmission through any skin, bone and tissue included in an optical transmission-reflectance path including said selected portion thereof and extending for several centimeters between selected points of light entry and exit laterally spaced several centimeters apart and located on contiguous skin surface areas of the body and after scattering in and deep reflectance from said selected portion along said path, said emissions including at least one measuring wavelength and at least one reference wavelength within said spectral range, each said measuring wavelength being selected such that said selected portion exhibits a selected absorption therefore, the extent of which is dependent upon a specific state of a local metabolic, oxygen dependent activity of said selected portion; and

(ii) means operatively associated with said light sources to produce emissions representing at least one said measuring wavelength and at least one said reference wavelength within said spectral range for transmission along



said path to said selected portion and at levels of intensity below that which would be damaging to the body and said selected portion;

(b) first optical cable means providing a bundle of optical fibers with selected fibers connected for receiving, transmitting and directing the output light emissions of said light sources at said measuring and reference wavelengths to a selected light entry point proximate said body and other selected fibers connected for receiving deeply penetrating light emissions reflected directly back from any skin, bone and tissue at or within a few millimeters of said selected point of light entry and coupling such emissions to a processing means;

(c) second optical cable means providing a bundle of optical fibers adapted for receiving deeply penetrating light emissions reflected and scattered to said selected point of light exit from said selected portion of said body and coupling such exiting light emissions to a processing means; and

(d) processing means operatively associated with said circuitry means adapted to produce from the outputs of said first and second optical cable means an electrical output signal corrected for changes in blood volume of said skin, bone and tissue during the measuring cycle and representing the difference in absorption of said measuring and reference wavelengths by said selected body portion as a function of the state of said local metabolic oxygen dependent activity and further adapted to convert said electrical output signal to a signal providing a substantially continuous and rapid measure of said activity;

(e) an improved detachable, body mountable apparatus associated with said circuitry, coupling and processing means comprising:

(i) a flexible, elongated support member adapted to be releasably secured to the body proximate a said selected portion of the body having a selected set of said light entry and exit points, said support member being adapted to provide ambient light shielding over said light entry and exit points and to conform to the curvature and shape of the body at the location thereof;

(ii) a mounting structure secured to said support member and adapted to deform in shape in correspondence with the curvature assumed by said support member when secured to the body;

(iii) a first preformed optical module mounted in said structure and providing a hollow housing enclosing first right angled light guide means formed by a bundle of optical fibers optically coupled to said first optical cable means and having an optical face centered in a slightly tapered outer face of said housing and adapted to be mated in a substantially pressed fit relation with said selected point of light entry utilizing selected fibers of said bundle for entry of light in said wavelengths to be transmitted, deeply reflected and scattered along said path and to said selected portion and other selected fibers for receiving deeply penetrating light emissions reflected directly back from any skin, bone and tissue at or within a few millimeters of said selected point of light entry;

(iv) a second preformed optical module mounted in said mounting structure and providing a second hollow housing enclosing second right angled light guide means formed by a bundle of optical fibers optically coupled to said second optical cable means and having a second optical face centered in a slightly tapered outer face of said second housing and spaced several centimeters away from said first optical face and adapted to be mated in a substantially pressed fit relation with said selected point of light exit for receiving deeply penetrating light emissions reflected and scattered to said selected point of light exit from said selected portion of said body.

4,380,241

SMOKING ARTICLES

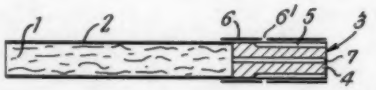
Henry G. Horsewell, Totton, England, assignor to British-American Tobacco Company Limited, London, England

Filed Apr. 17, 1981, Ser. No. 255,091

Claims priority, application United Kingdom, May 1, 1980, 8014455

Int. Cl.³ A24D *3/04, 3/18*

U.S. Cl. 131—336 **11 Claims**



1. A smoking article comprising a smoking-material rod and, to one end thereof, a flow-impedance device comprising a rod-like element of foam or fibrous material impervious to the flow of smoke therethrough and at least one open-ended smoke-flow passage means extending from one end to the other of the element, the pressure drop of the said passage means, determined at a flow rate through the device of 17.5 cm^3 per second, being in the range from 40 to 200 mm water gauge and said device being enclosed in a wrapping permitting inward flow of ambient air therethrough into the device, the said device having air-conducting means whereby air flowing inwardly through the said wrapping can be conducted to and outwardly from the mouth end of the said device, which de-

vice is effective to remove not more than 25% of the total particulate matter of the smoke passing through the device when the smoking article is smoked.

4,380,242

METHOD AND SYSTEM FOR DISTRIBUTING NATURAL GAS

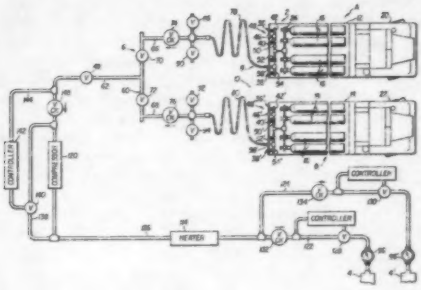
Don A. Bresie; Donald W. Fowler, and Jack M. Burns, all of Austin, Tex., assignors to Texas Gas Transport Company, Tex.

Division of Ser. No. 88,516, Oct. 26, 1979, abandoned. This application May 28, 1981, Ser. No. 267,998

The portion of the term of this patent subsequent to Jul. 22, 1997, has been disclaimed.

Int. Cl.³ F17C *5/02*

U.S. Cl. 137—113 **10 Claims**



1. A system for continuously distributing natural gas from a supply terminal to a user terminal in an amount adequate to assure the maintenance of a preselected, preferred rate of supply to said user terminal, including:

at least two separate pressure vessel means, at least one of which is movable between said supply terminal and said user terminal, and both of which are capable of containing a discrete batch of natural gas under a pressure in excess of about 800 psi, the specific number of separate pressure vessel means being chosen in accordance with a distribution plan that takes into account the preferred rate of natural gas production from said supply terminal and the selected rate of supply of natural gas to said user terminal, and being adequate to assure the maintenance of said selected rate of supply said separate pressure vessel means being initially filled with natural gas at said supply terminal; and

an off-loading manifold system connected with said user terminal, and including:

at least two off-loading stations, for simultaneously receiving said separate pressure vessel means;

at least two supply conduit means, one for each of said off-loading stations, said supply conduit means being connectable with said separate pressure vessel means;

a one-way check valve in each of said supply conduit means, arranged to prevent a backflow of natural gas therethrough;

an off-loading manifold connected with said two supply conduits downstream of said check valves;

a feed conduit connected with said off-loading manifold between said two supply conduit means;

distributor conduit means connected with said feed conduit, and with said user terminal;

means connected in said distributor conduit means for regulating the flow of natural gas therethrough;

valve means for controlling the flow of natural gas from said supply conduit means to said user terminal; and

means located downstream of said check valves arranged and operable to switch natural gas flow from a first separate pressure vessel means connected with a first one of said supply conduit means, to natural gas flow from a second separate pressure vessel means connected with the other of said supply conduit means, with no significant interruption of natural gas flow to said user terminal to assure the maintenance of said selected rate of supply.

4,380,243

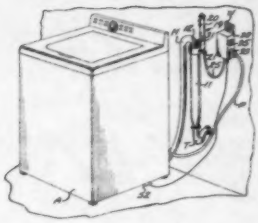
OVERFLOW CONTROL SYSTEM

Charles A. Braley, 5602 Palos Verdes Blvd., Torrance, Calif. 90505

Filed Jan. 16, 1980, Ser. No. 112,641

Int. Cl.³ H01H *35/18, 29/06*

U.S. Cl. 137—312 **1 Claim**



1. In an appliance adapted to be powered from an electrical outlet and conformed to receive from a water supply predetermined amounts of water at automated first intervals and to drain into a drainage system said amounts of water at automated second intervals, the improvement comprising:

a tubular stand pipe interposed between said drainage system and said appliance aligned in a substantially vertical alignment above said drainage system for receiving in a portion of the upper opening thereof a drain hose from said appliance conveying said amounts of water therethrough and for venting to the atmosphere through the remaining portion of said upper opening;

level sensing means received in said upper opening and conformed to produce a switching signal indicative of the collection of water in said stand pipe above a preselected level, said level sensing means including a tube segment open at both ends conformed for insertion into said remaining portion of said upper opening of said standpipe and for suspended engagement thereat, a weighted rod received in said tube segment, a spring loaded switch assembly deployed to support the upper end of said weighted rod, said switch having a spring coefficient selected for switching thereof to produce said switching signal upon a partial immersion of said rod in said collection of water; and

interrupting leakage means interposed between said appliance and said electrical outlet and connected to receive said switching signal for disrupting the receipt of electrical power upon the occurrence of said switching signal.

4,380,244

HOSE CONTROL SYSTEM

Stanley D. Caudill, and Frederick R. Goode, both of Lexington, Ky., assignors to FMC Corporation, Chicago, Ill.

Filed Mar. 5, 1981, Ser. No. 240,726

Int. Cl.³ F16L *33/00*

U.S. Cl. 137—355.16 **2 Claims**

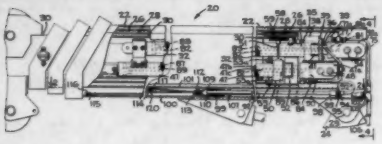
1. In a boom structure wherein a first boom section is mounted for movement relative to a second boom section and a freely rotatable guide wheel is positioned between adjacent walls of said sections; the improvement which comprises:

a flexible resilient conduit disposed around said wheel;

means anchoring one portion of said conduit to said first section and another portion to said second section;

non-resilient connecting means resisting a pull of sufficient

force on said wheel in a direction to stretch said resilient conduit a sufficient amount to provide a conduit tensioning force sufficient to maintain said conduit taut on said wheel during relative movement of said boom sections;



said first and second boom sections each including a lower wall, which walls are spaced from each other, and wherein;

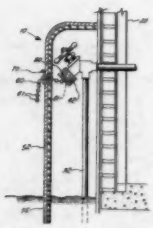
said guide wheel, said resilient flexible conduit and said means resisting a pull on said wheel are all disposed between said lower walls.

4,380,245

ANTIFREEZE COVER ASSEMBLY FOR EXTERNAL FAUCETS

Irving V. Hefner, 1429 Huron Ave., New Orleans, La. 70005

Filed Jan. 26, 1981, Ser. No. 228,629
Int. Cl.³ F16K *49/00*
U.S. Cl. 137—375 **4 Claims**



1. An antifreeze cover assembly for protecting external water faucet and riser pipe assemblies adjacent building walls comprising:

a. a cover, said cover providing an internal space normally occupied during operation by an exterior faucet and a riser pipe on a home, said cover providing a back flange portion which during operation contacts the flat wall surface of the building, and a lowermost portion which communicates with the earth and continuously covering the riser pipe;

b. a cap member having internal threads and being connectable during operation to the external threads of the faucet to be protected;

c. a connector affixed at one end portion to said cap, said connector extending to said cover removably attaching thereto, securing said cover to the building wall; and

d. detachable locking means carried by said cover for removably securing said connector to said cover.

4,380,246

BUTTERFLY VALVE AND METHOD OF MAKING SAME

Thomas M. Casale, Arlington Heights; Frederick J. Schmitz, Jr., Chicago, and Victor Pauperas, Oak Lawn, all of Ill., assignors to Dayco Corporation, Dayton, Ohio

Filed Mar. 20, 1981, Ser. No. 245,844
Int. Cl.³ F16K *1/22*
U.S. Cl. 137—375 **3 Claims**

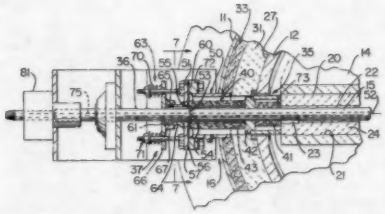
1. In a butterfly valve for controlling flow therethrough of a high temperature fluid, said valve comprising

an outer metal housing, a ceramic lining carried by said housing and defining a substantially right circular cylindrical fluid flow passage through said valve, a valve closure member which is a disc of substantially circular outline, a rotatable metal shaft embedded on a diametrical line of said disc, and means rotatably supporting said shaft on said housing to enable rotation of said member within said flow passage from an open to a closed position to open and close said flow passage, said member being made of a ceramic material and said shaft being embedded substantially centrally between opposed surfaces of said member,

said member having a roughly cylindrical diametrical opening therethrough defining a corresponding cylindrical inside surface and further comprising a tubular metal sleeve disposed concentrically around said shaft, a key connecting said sleeve and shaft and preventing relative rotation therebetween, and a refractory material disposed between said sleeve and said inside surface fixing said member to said sleeve and shaft,

said member having a plurality of angularly spaced rectilinear grooves extending radially from its inside surface and said refractory material having integral portions thereof disposed within said rectilinear grooves which help hold said member and refractory material together as a unitary structure,

said lining being initially made independently of said housing and having an outside surface, a plurality of axially spaced grooves in said lining extending inwardly from said outside surface, and further comprising a thickness of refractory material disposed against said outside surface v.ith portions thereof received within said axially spaced



grooves, said portions of refractory material in said axially spaced grooves helping to hold said lining and refractory material together as a unitary structure ,

a thermal insulating material disposed between said thickness of refractory material and said metal housing,

two sets of aligned openings in said metal housing, thermal insulating material, refractory material, and ceramic lining at diametrically opposed positions on said valve; said shaft having opposite end portions with each end portion extending through an associated set of aligned openings and outwardly of said metal housing; and a support and seal assembly for each of said end portions of said shaft, each assembly serving to support its shaft end portion while preventing leakage out of said valve of fluid flowing in said flow passage, and

a tubular flange structure fixed at its inner end in sealed relation to said housing and having a planar outermost surface which is disposed perpendicular to a central longitudinal axis of said shaft, an annular groove in each of said shaft end portions, a snap ring disposed in each groove and having an outside diameter which is greater than the outside diameter of its shaft end portion thereby defining a corresponding annular portion thereof, each groove and snap ring having associated outer surfaces disposed substantially coplanar with said planar surface, a high temperature gasket covering said planar surface and said annular portion of said snap ring, said gasket having a central bore defining a right circular cylindrical surface disposed in sealed relation against the outside surface of its associated

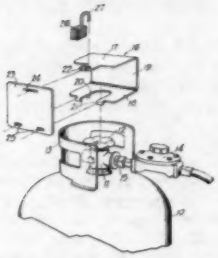
shaft end portion, an annular plate structure disposed axially outwardly of said gasket along its shaft end portion and having a gasket engaging surface sandwiching same against said planar surface, high temperature packing ring means disposed in sealed relation concentrically around and against the outside surface of its associated shaft end portion, and a spring assembly yieldingly urging said packing ring means in sealed relation against said annular plate structure.

4,380,247

SAFETY GUARD FOR VALVE

Fred O. Douglas, Columbus, Ga., assignor to W. C. Bradley Co., Columbus, Ga.

Filed Apr. 2, 1981, Ser. No. 250,203
Int. Cl.³ F16K *35/00*
U.S. Cl. 137—382 **3 Claims**



1. A two part separable safety guard for a valve comprising a substantially U-shaped body portion having spaced top and bottom walls which are disposed horizontally in use and a connecting vertical wall, the opposite ends of the body portion being open, the bottom wall of the body portion having a central slot opening through its leading end to receive the base of a valve to which the guard is applied, the leading edges of the top and bottom walls of the body portion being in vertical alignment, locking elements on the leading edges of the top and bottom walls of the body portion, and a substantially flat locking plate adapted to be placed against the leading edges in spaced substantially parallel relationship to the connecting vertical wall, and said locking plate having apertures formed therethrough receiving said locking elements of the top and bottom walls lockingly.

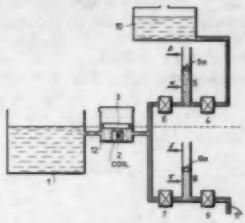
4,380,248

EQUIPMENT FOR THE MEASUREMENT OF EVAPORATION AND/OR PRECIPITATION

Valeria Ambrus, and Henrik Karsai, both of Budapest, Hungary, assignors to Ganz Muszer Muvek, Budapest, Hungary

Filed Jul. 21, 1980, Ser. No. 171,641
Claims priority, application Hungary, Jul. 21, 1979, KA 1532
Int. Cl.³ F16K *31/32*
U.S. Cl. 137—428 **2 Claims**

1. Apparatus for the measurement of evaporation and precipitation, comprising an open-topped pan for a quantity of water, said pan fluidly connected to feeding and tapping means for detecting a predetermined water level in the pan, means responsive to a fall in the water level in the pan below said predetermined level to feed a first plurality of quantities of water of predetermined volume to the pan until said predetermined water level is restored, means responsive to a rise in water level in the pan above said predetermined level to tap from the pan a second plurality of quantities of water of predetermined volume until said predetermined water level is restored, a float chamber connected in fluid communication with said pan through a tube of relatively small cross section disposed below said predetermined level, a float in said float chamber, means responsive to the height at which said float floats in said float chamber to control said feeding means and tapping means, and means for counting and recording as evaporation said first plurality of quantities of water of predetermined volume and for counting and recording as precipitation said second plurality of quantities of water of predetermined volume and providing a continuous measurement.

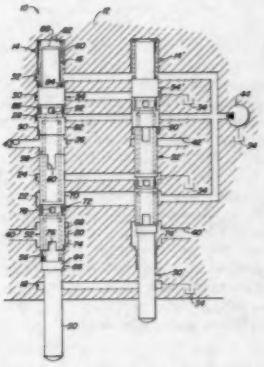


4,380,249

STEERING CLUTCH AND BRAKE CONTROL VALVE

Wilbur D. Behlmer, and John J. Kass, both of Dubuque, Iowa, assignors to Deere & Company, Moline, Ill.

Filed May 21, 1981, Ser. No. 265,935
Int. Cl.³ F15B *13/07*
U.S. Cl. 137—596.2 **1 Claim**



1. A hydraulic control valve for effecting the sequential actuation of pressure-released steering brakes and pressure-engaged steering clutches, comprising: a valve body having a valve bore therein; said valve bore forming, at axially spaced locations thereof, a brake service recess, a first pressure recess, a first sump recess, a clutch service recess, a second pressure recess, a second sump recess, a third pressure recess and an abutment surface facing in the direction of the recesses arranged in serial order proceeding from a first toward a second end of the bore; a spool valve means reciprocably mounted in the bore and comprised of three separate sections including a valve operating plunger extending through the first end of the bore, a brake spool located next to the plunger for selectively connecting the brake service recess with one or the other of the first pressure and sump recesses, and a clutch spool located next to the brake spool for selectively connecting the clutch service recess to one or the other of the second pressure recess and sump recess; first, second, and third coil compression springs located in the bore with the first spring having opposite ends engaged with the plunger and brake control spool, with the second spring having opposite ends engaged with the brake spool and the clutch control spool and with the third spring

having one end engaged with the clutch spool and another end engaged with the abutment surface presented by the bore.

4,380,250

CHOKE UNIT

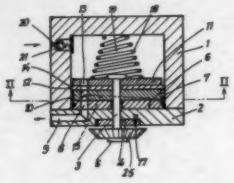
Kurt Stoll, Leuzhalde 72, 73 Esslingen/N., Fed. Rep. of Germany

Filed Mar. 24, 1981, Ser. No. 247,022

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1980, 3012059

Int. Cl.³ F16K *3/34*

U.S. Cl. 137—599 12 Claims



1. In a choke apparatus for gases having a housing, an inlet duct in said housing and an adjustment system for changing the choking effect, said system communicating with an outlet opening, the improvement comprising wherein said adjustment system includes:

(a) a rotatable adjustment plate, a shaft able to be turned from without said housing and having said plate keyed thereon,

(b) means defining an outlet duct in communication with said outlet opening, one side of said adjustment plate facing said outlet duct and having formed therein a groove extending less than 360° around the axis of rotation of said plate, said groove having a cross-section which changes in area along its length, and

(c) a fixed cover plate covering said side of said adjustment plate with said groove, said cover plate having an outlet hole which is aligned with said groove and communicates with said outlet duct, said plate with said groove being able to be rotated from a starting position with the lowest choking effect to a position with the largest choking effect, the end of said groove with the largest cross-section communicating with an inlet opening in said adjustment plate which by way of an inlet space in said housing communicates with said inlet duct.

4,380,251

VALVE CONSTRUCTION HAVING MULTIPLE PISTON MEANS AND METHOD OF MAKING THE SAME

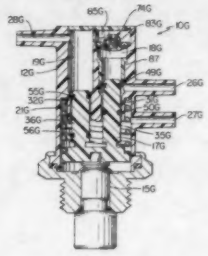
Marvin P. Weaver, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Continuation of Ser. No. 126,836, Mar. 3, 1980, abandoned, which is a continuation-in-part of Ser. No. 911,403, Jun. 1, 1978, Pat. No. 4,228,817. This application Dec. 9, 1981, Ser. No. 328,934

Int. Cl.³ F16K *15/18*

U.S. Cl. 137—877 6 Claims

1. In a self-contained temperature responsive valve construction having a housing means provided with a pair of ports separated by a first valve seat means that is opened and closed by a valve member means in response to temperature sensed by a piston and cylinder type temperature responsive device carried by said housing means and being operatively associated with said valve member means to control the same through axial movement thereof, the improvement wherein said housing means has a by-pass passage means therein separate from said valve member means and adapted to interconnect said pair of ports together independently of said first valve seat means when said first valve seat means is closed by said valve member means, and a one-way check valve means carried by said housing means and being separate from said valve member means for controlling said by-pass passage means to permit fluid flow between said ports through said check valve means in only one direction, one of said ports being disposed intermediate said



first valve seat means and said one-way check valve means, said housing means having a second valve seat means disposed intermediate said one of said ports and said one-way check valve means to be controlled by said valve member means.

4,380,252

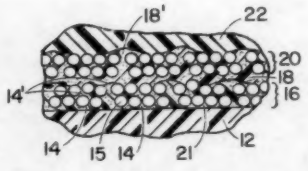
WIRE REINFORCED HOSE AND METHOD

Herbert W. Gray, Lawson, and Roger A. Payne, Excelsior Springs, both of Mo., assignors to The Gates Rubber Company, Denver, Colo.

Filed Mar. 23, 1981, Ser. No. 246,516

Int. Cl.³ F16L *11/08*; B32B *5/20*

U.S. Cl. 138—125 20 Claims



1. A hose comprising an inner polymeric tube, a substantially tightly packed stranded wire reinforcement telescoped thereover, and an expanded polymeric cushion matrix at least partially encapsulating strands of the reinforcement and filling at least a portion of interspaces between adjacent strands and filling at least a portion of interspaces between the reinforcement and the polymeric tube.

4,380,253

HEAT-INSULATED HOSE FOR LIQUEFIED GASES

Howard B. Mead, Tarporley, and Graham L. Williams, Whitby, both of England, assignors to Shell Research Limited, London, England

Filed Feb. 17, 1981, Ser. No. 234,977

Claims priority, application United Kingdom, Apr. 3, 1980, 8011210

Int. Cl.³ F16L *9/16*

U.S. Cl. 138—149 15 Claims

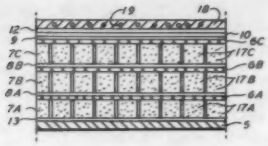
1. A heat-insulated hose for liquefied gases, comprising:

an inner hose which maintains its strength and flexibility at cryogenic temperatures;

a plurality of successive layers of heat-insulating material arranged around the inner hose;

said layers of heat-insulating material comprising helically

wound backing strips of fibre material upon which a mosiac of blocks of heat-insulating material is melted; and



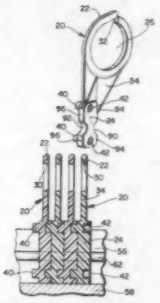
an outer protective sheath arranged around the outermost layer of heat-insulating material.

4,380,254

WEFT GUIDANCE TUBE FOR LOOMS

James H. Bonasch, East Greenwich, R.I., and William J. Bouchard, Jr., Fall River, Mass., assignors to Leesona Corporation, Warwick, R.I.

Filed Sep. 8, 1981, Ser. No. 299,848
Int. Cl.³ D03D 47/30
U.S. Cl. 139—435 11 Claims



1. A weft guidance tube for a fluid weft insertion system comprising, an elongated member having a longitudinal channel therein, a plurality of segments juxtaposed in said channel, each said segment including a base and an upper end, said upper end having an aperture therethrough and an exit slot extending from said aperture, connecting means on each segment for connecting each segment to an adjacent segment with the apertures and exit slots of said segments being in alignment, the base of each said segment being wider in cross-section than the upper end thereof to thereby space said upper ends from each other when said segments are juxtaposed, and means for securing said plurality of segments in said channel.

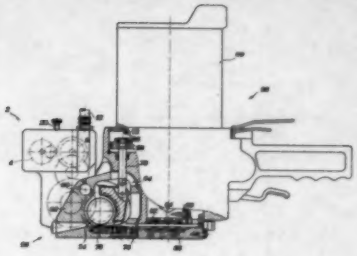
4,380,255

HOOPER APPARATUS

Peter Fromm, Ultikon, Switzerland, assignor to Fromm AG, Spreitenbach, Switzerland

Filed Aug. 19, 1981, Ser. No. 294,216
Claims priority, application Switzerland, Sep. 5, 1980, 6681/80
Int. Cl.³ B21F 9/02
U.S. Cl. 140—93.2 10 Claims

1. Hooper apparatus for connecting steel bands having a band tensioning mechanism comprising tension roller means for engaging said bands, motor means including a first motor for driving said tension roller means with low speed at high torque and a second motor for driving said tension roller means with high speed at low torque, said tension roller means being prestressed toward a base support, and plural stage reduction gear means connecting said tension roller means with said motor means, said second motor being connected to any but the first stage of said plural stage reduction gear means, with



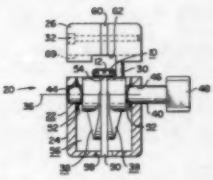
said first motor being connected via a first stage to said plural stage reduction gear means and with one of said first and second motors being connected by means of a compensating clutch to said plural stage reduction gear means.

4,380,256

CABLE SLITTING AND SPREADING TOOL

Joseph Peterpaul, West Orange, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Dec. 30, 1980, Ser. No. 221,392
Int. Cl.³ B21F 1/00
U.S. Cl. 140—106 20 Claims



1. A tool for slitting and spreading an insulating jacket surrounding an electrical conductor in an elongate electrical cable, comprising:

support means for supporting a longitudinal extent of said cable in a fixed plane thereon;

movable cutting means adjacent said support means for piercing at a point the insulating jacket of an electrical cable disposed on said support means upon movement of said cutting means toward such cable and for progressively slicing upon continued movement said insulating jacket longitudinally unidirectionally from said point; and

means for progressively longitudinally unidirectionally entering said sliced insulating jacket and laterally spreading portions thereof.

4,380,257

METHOD AND APPARATUS FOR PROCESSING FLUID MATERIALS

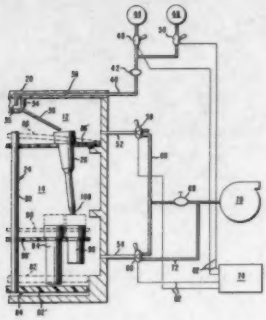
Gary W. Howell, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 2, 1981, Ser. No. 230,386
Int. Cl.³ B65B 3/04; B67C 5/37
U.S. Cl. 141—1 21 Claims

1. A method of switching the flow of a fluid from a first to second and third unconnected flow paths using a flexible, generally planar and horizontally disposed member defining a receptacle for removably positioning a first flow path, and first

rack means positioned below the member for removably positioning second and third flow paths comprising the steps of:

removably mounting said first flow path in said flexure member with the inlet and outlet of the first flow path located on opposite faces of the member,



positioning said second and third flow paths in the first rack means in side by side relation vertically below said first flow path with one of the second and third flow paths in flow alignment with said first flow path, and

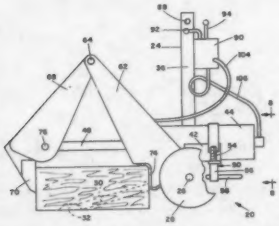
flexing said member to switch the flow alignment of said first flow path from the one to the other of said second and third flow paths.

4,380,258

LOG SPLITTER

Paul E. Hanser, Wilton, Iowa, assignor to HWH Corporation, Moscow, Iowa

Filed Apr. 9, 1981, Ser. No. 252,652
Int. Cl.³ B27L *7/00*
U.S. Cl. 144—193 A **8 Claims**



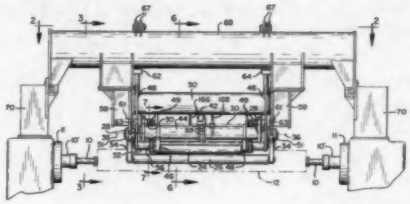
1. A log splitter, comprising: a base structure, a two-way hydraulic splitter motor having a cylinder, piston and piston rod and disposed adjacent to the base structure with the lengthwise axis of the cylinder generally horizontal and the piston rod projecting away from the base structure, a first arm having a lower end adjacent to the base structure and rising to an upper end at an elevation above that of the base structure, pivot means connecting the first arm lower end to the cylinder on a generally horizontal axis transverse to the cylinder axis, a second arm having an upper end adjacent to the first arm upper end and a lower end generally horizontally alined with the first arm lower end, means pivotally interconnecting the upper ends of the arms on an axis parallel to that of the aforesaid pivot means, means mounting the cylinder on the base structure and fixing it against movement along its axis, said means including clamp means selectively releasable and lockable to enable angular positioning of the cylinder and arms as a unit about the cylinder axis and relative to the base structure, stop means at the lower end of the first arm and facing the lower end of the second arm, a splitter blade on the lower end of the second arm and directed toward the stop means, means connecting the free end of the piston rod to the second arm, and fluid line means connected to the cylinder for extending the piston to space the splitter blade away from the stop means and for retracting the piston to move the blade toward the stop means for splitting a log received between the blade and stop means while the piston is extended.

4,380,259

VENEER LATHE APPARATUS AND METHOD USING INDEPENDENTLY ADJUSTABLE POWERED BACK-UP ROLL

Byron B. Brookhyser, Milton; Robert H. Lichlenwalter, Tacoma, both of Wash.; Arthur L. McGee, Lake Oswego, Oreg., and Darrell E. Pierson, Federal Way, Wash., assignors to The Coe Manufacturing Company, Painesville, Ohio

Filed Jan. 12, 1981, Ser. No. 224,081
Int. Cl.³ B27L *5/02*
U.S. Cl. 144—357 **27 Claims**



1. Veneer lathe apparatus, comprising:

lathe spindle means for engaging the opposite ends of a log to rotate said log;

lathe knife means for peeling a thin sheet of veneer from said log as it rotates;

first roll means for engaging the log;

powered second roll means for engaging said log between said first roll means and said knife means to assist in the rotation of said log; and

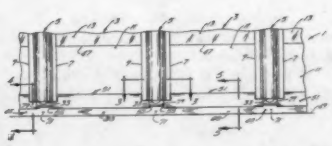
automatic control means for independently adjusting the positions of said first roll means and said powered roll means with respect to the axis of said lathe spindle means and for adjusting the spacing between the two roll means in response to reductions in the diameter of said log as it is peeled.

4,380,260

FOLDING CLOSURE WITH A SWEEPER

Henri M. R. Labelle, 50 Westmooreland Ave., Cornwall, Ont., Canada

Filed Aug. 21, 1981, Ser. No. 295,229
Int. Cl.³ E06B *3/12*
U.S. Cl. 160—235 **9 Claims**



1. A folding closure having a plurality of panels arranged one after the other; a hinge located between each pair of adjacent panels, the hinge joining the adjacent panels together along their adjacent side edges while spacing the adjacent panels slightly apart to provide a gap between them; a carrier member on, and extending across, the bottom of each panel;

one or more sweeper strips slidably mounted on the carrier members to provide a sweeper extending across the bottom of the closure, each sweeper strip traversing at least several consecutive panels and passing unbroken and unsupported from one carrier member to the next across each gap between adjacent panels.

4,380,261

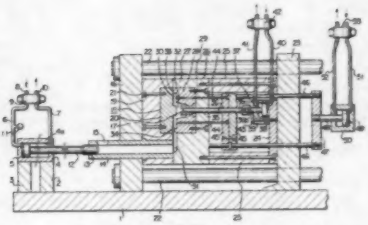
DIE-CASTING METHOD

Haruo Suzuki, Haruhimura, and Shigeyoshi Hashimoto, Anjo, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 118,806, Feb. 14, 1979, as PCT/JP79/00035, published as WO80/01658, § 102(e) Date Apr. 24, 1979, abandoned.

Int. Cl.³ B22D *18/02*

U.S. Cl. 164—120 13 Claims



1. A die-casting method comprising:

a first step of relatively moving dies into close contact so as to form therebetween a die cavity for casting a product, a runner through which molten metal is injected into said die cavity, and a substantially non-narrowing squeeze passage connected directly to said die cavity at a point other than the point of connection between said die cavity and said runner;

a second step of injecting, by forwardly moving an injection plunger to effect a predetermined injection pressure, the molten metal from said runner via a gate into said die cavity and said squeeze passage to fill said die cavity and said squeeze passage with the molten metal;

a third step of starting a squeezing displacement of the molten metal in said non-narrowing squeeze passage by moving a squeeze plunger through said squeeze passage from a position therein remote from said die cavity toward said die cavity and at a predetermined squeezing pressure greater than said injection pressure and at a time before said gate is blocked by solidified molten metal;

a fourth step of continuing the squeezing on said molten metal by said squeeze plunger in said passage at said predetermined squeezing pressure until said cavity is filled voidlessly and, during said continued squeezing, forcing molten metal out of said die cavity through said gate into said runner by the molten metal displaced out of said squeeze passage by said squeeze plunger and until the molten metal is completely solidified at least in said die cavity while retaining said squeeze plunger substantially fully inside said passage to produce a solidified voidless die-cast product;

a fifth step of retracting said squeeze plunger to remove said squeezing pressure from said squeeze passage after the molten metal is solidified in said die cavity;

a sixth step of relatively moving said dies away from one another for the removal of said die-cast product which has been solidified in said die cavity; and

preventing said injection plunger from being moved backward during said third and fourth steps by the effect of said greater pressure applied by said squeeze plunger.

4,380,262

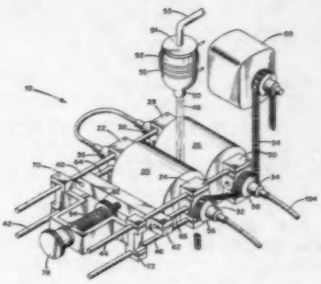
APPARATUS FOR DOUBLE ROLLER CHILL CASTING OF CONTINUOUS METAL FOIL

Ralph P. I. Adler, Wellesley; Thomas J. Gorsuch, Westwood; Yellapu V. Murty, Acton, and Alexander R. Woronicki, Stoneham, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Oct. 27, 1980, Ser. No. 200,861

Int. Cl.³ B22D *11/00, 11/06, 11/124*

U.S. Cl. 164—423 6 Claims



1. An apparatus for double roller chill casting of continuous metal foil comprising:

a plurality of substantially parallel mounting members;

first and second bearing members slideably mounted on said mounting members;

first rotary chill roller member rotatably mounted on said first and second bearing members;

third and fourth bearing members fixedly mounted on said mounting members;

second rotary chill roller member rotatably mounted on said third and fourth bearing members;

a yoke member fixedly mounted at each end thereof to said mounting members;

a bar member disposed laterally adjacent to and spaced apart from said first roller member, said bar member attached at the ends thereof to said first and said second bearing members;

positioning and restoring means disposed between said bar member and said yoke member for urging said bar member away from said yoke member and toward said second roller member and for maintaining said first roller spaced apart from said second roller member by a selectably variable minimum spacing;

means for synchronously contrarotating said first and said second roller members; and

means for delivering molten metal between said first and said second roller members;

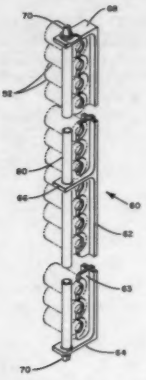
whereby when molten metal is delivered between the contrarotating roller members and material between said roller members exerts a displacing force to move said first roller member away from its position of minimum spacing from said second roller member, said restoring means exerts a force on said bar member to slideably urge said first and said second bearing members and said first roller member toward said second roller member to establish a dynamic steady state spacing between said first and said second roller members to produce continuous metal foil of substantially uniform thickness equal to said dynamic steady state spacing.

4,380,263

HEAT EXCHANGER TUBE SUPPORT ASSEMBLY

William E. Wright, East Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Nov. 3, 1980, Ser. No. 202,984
Int. Cl.³ F28F 9/00
U.S. Cl. 165—76 5 Claims



1. A heat exchange unit having a base pan for supporting the unit, and a fan assembly and a subassembly which comprises:

a heat exchanger formed from a plurality of runs of wound fin tubing:

a support member having a vertically extending portion extending the height of the heat exchanger and having a top lateral portion and a bottom lateral portion both extending across the runs of wound fin tubing, each lateral portion defining an opening therein;

a tubular support means extending through the openings in the lateral portions of the support member securing the runs of wound fin tubing between the tubular support means and the support member; and

means for securing the tubular support means to the base pan and to the structural assembly for incorporating the subassembly as an integral part of the heat exchange unit.

4,380,264

SURVEY TOOL STRING

William C. Lyons, and Scot L. Scurlock, both of Sante Fe, N. Mex., assignors to Drilling Development, Inc., Houston, Tex.

Filed Dec. 24, 1980, Ser. No. 219,922
Int. Cl.³ E21B 41/00, 47/00
U.S. Cl. 166—169 14 Claims

1. A tool for holding a magnetic directional survey instrument comprising:

a tubular, non-magnetic housing having a central bore for holding a major portion of said survey instrument;

closure means for enclosing one end of said tubular housing, said closure means having sealing means coacting with said tubular housing to prevent fluids from entering said tubular housing and having a recess in longitudinal alignment with said bore of said housing and adapted to hold a portion of said survey instrument;

connector means connected to the other end of said tubular housing for joining said tubular housing to means for lowering said tool into a short radius curve of a deviated well;

said connector means having a passageway for conducting fluids from the interior of said tool lowering means to the exterior of said tubular housing and having a recess in longitudinal alignment with said bore of said housing and adapted to hold a portion of said survey instrument, and

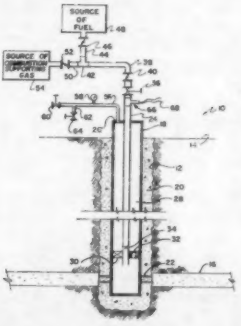
said connector means and said tubular housing having means to prevent fluids from entering said tubular housing.

4,380,265

METHOD OF TREATING A HYDROCARBON PRODUCING WELL

Henry H. Mohaupt, 1151 Estrella Dr., Santa Barbara, Calif. 93110

Filed Feb. 23, 1981, Ser. No. 237,538
Int. Cl.³ E21B 43/24, 43/26, 47/00
U.S. Cl. 166—250 12 Claims



1. A method of treating a hydrocarbon producing well of the type having a casing string and a tubing string inside the casing string, both strings extending from the surface to adjacent a hydrocarbon bearing formation and being in fluid transmitting relation, comprising

injecting into a first of the strings, at the surface, a combustible mixture including a gaseous phase material in a quantity larger than the volumetric capacity of the first string;

monitoring the other of the strings, at the surface, to detect the presence of the combustible mixture;

igniting the combustible mixture after detecting the presence of the combustible mixture at the surface;

valving the string closed and thereby preventing backflow of gaseous phase materials from the strings toward the surface during combustion of the mixture; and

moving hot combustion products from the string into the formation.

9. A method of stimulating a hydrocarbon producing well of the type having a casing string extending from the surface to adjacent a hydrocarbon bearing formation and a tubing string, inside the casing string and communicating therewith, extending from the surface toward the hydrocarbon bearing formation, the method comprising

steps for periodically injecting hot combustion products into the formation including

(a) injecting into the tubing string, at the surface, a combustible mixture including a gaseous phase material in a quantity sufficient to substantially fill the tubing string and at least part of the annulus between the tubing and casing strings;

(b) injecting into the annulus at the surface, an accumulator gas in a quantity sufficient to fill only part of the annulus;

(c) preventing flow of the combustible mixture toward the surface;

(d) igniting the combustible mixture;

(e) combusting the mixture in the well and increasing the pressure in the well;

(f) moving hot combustion products from the well into the formation and thereby decreasing the pressure in the well; and then

(g) repeating steps (a), (c), (d), (e) and (f).

4,380,266

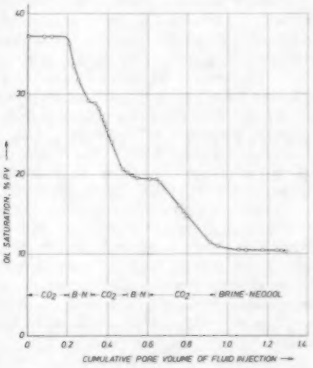
RESERVOIR-TAILORED CO_2-AIDED OIL RECOVERY PROCESS

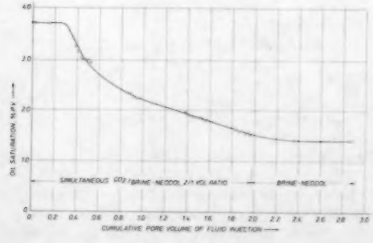
Scott L. Wellington, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 12, 1981, Ser. No. 243,164

Int. Cl.³ E21B *43/22, 47/06*

U.S. Cl. 166—252 **2 Claims**





1. A process for formulating and injecting a CO_2-containing fluid for displacing oil within an oil and brine-containing subterranean reservoir comprising:

determining the reservoir temperature and properties of the oil and brine contained within the reservoir;

selecting a surfactant which both consists essentially of at least one polyalkoxyalcoholic surfactant and is capable of inducing the formation of substantially homogeneous dispersions of each of the specified types when said surfactant is mixed with the specified fluids at the reservoir temperature and a pressure of at least about 2000 psi at which CO_2 is substantially liquid at the reservoir temperature;

said types of dispersions being (1) CO_2 dispersed in a solution of surfactant dissolved in brine having a salinity substantially equivalent to that of the brine in the reservoir, when the volumes of the CO_2 and aqueous liquid are substantially equal and the mixture is substantially free of oil, (2) CO_2 and oil having properties at least substantially equivalent to those of the reservoir oil dispersed in a solution of the same surfactant in brine where the volume of oil is smaller than the total volume of CO_2 and brine, and (3) CO_2 and a solution of the same surfactant in brine dispersed in the same oil where the volume of oil exceeds the total volume of CO_2 and brine; and

injecting into the reservoir, at a pressure greater than about 2000 psi at which the CO_2 is substantially liquid at the reservoir temperature, CO_2, the selected surfactant, and a brine having a salinity at least substantially equivalent to that of the brine in the reservoir, in a sequence and proportion such that before, or soon after, entering the reservoir (a) the CO_2 is initially dispersed in a solution of the surfactant in brine, (b) advancing portions of the initial dispersion are converted to a dispersion of CO_2 and the reservoir oil in the solution of surfactant in brine, and (c) advancing portions of the latter dispersion are converted to a dispersion of CO_2 and a solution of surfactant in brine in the reservoir oil.

4,380,267

DOWNHOLE STEAM GENERATOR HAVING A DOWNHOLE OXIDANT COMPRESSOR

Ronald L. Fox, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 7, 1981, Ser. No. 222,854

Int. Cl.³ E21B *43/24;* **F22D** *1/18;* **F23D** *15/04*

U.S. Cl. 166—303 **14 Claims**

1. An apparatus for generation of steam in a borehole for penetration into an earth formation, comprising:

a housing adaptable for insertion into the borehole;

an oxidant supply means;

a fuel supply means for supplying fuel;

a combustor assembly having a combustion chamber contained in said housing for receiving, mixing and combusting said oxidant and fuel for generating hot combustion gases;

an igniter means for igniting the fuel and oxidant mixture in said chamber;

a water supply means for injecting water into said combustion chamber to be converted to steam by the heat of combustion;

oxidant compressor means contained in said housing for compressing the oxidant prior to injection into said chamber;

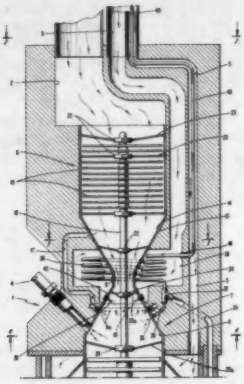
means for driving said compressor means by said hot combustion gases; and

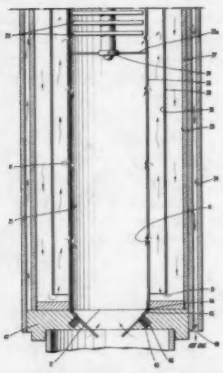
steam outlet means for ejecting the hot combustion gases and steam for penetration into the earth formation.

14. In operation of a downhole steam generation for injecting steam into an earth formation, a method comprising the steps of:

compressing oxidant downhole to a relatively high pressure by compressor means;

injecting the high pressure oxidant into a combustion chamber;
injecting fuel into the combustion chamber to produce a fuel and oxidant mixture;
igniting the fuel and oxidant mixture thereby producing high pressure expanding combustion gases;
driving a turbine employing the driving force of the expanding combustion gases;





powering the compressor means by the turbine;
transferring the hot combustion gases downstream of the turbine to a steam generation zone;
injecting water into the steam generation zone to produce steam; and
injecting the steam into the earth formation.

4,380,268

PETROLEUM AND GAS WELL ENHANCEMENT AGENT

Keith R. Martin, West Chester, Pa., assignor to Uniflo Resources, Inc., Springfield, N.J.

Filed Jul. 9, 1981, Ser. No. 281,718
Int. Cl.³ E21B *37/06, 43/00*
U.S. Cl. 166—304 **2 Claims**

1. A process for removal of paraffin from gas and petroleum wells comprising the steps of:
(a) adding to a well a mixture of 10 weight percent polymer of a primary alcohol and ethylene oxide, 2 weight percent sodium silicate and 88 weight percent water;
(b) adding water to the well;
(c) pumping the mixture up the well;
(d) discontinuing pumping of the well; and
(e) repumping the well.

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QUICK RELEASE FIRE HOSE CABINET

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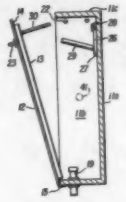
Division of Ser. No. 157,444, Jun. 9, 1980, abandoned. This application Nov. 6, 1981, Ser. No. 319,043
Int. Cl.³ A62C *35/00*
U.S. Cl. 169—51 **2 Claims**



1. A fire fighting device for installation in spaces having a pressurized water supply comprising:
a storage cabinet having a plurality of means therein and thereon for attaching said cabinet to a supporting structure in an upright position;
said cabinet being formed by a storage compartment with a tightly fitting cover therefor hingedly attached along the lower side of said compartment;
the compartment further having water inlet and control means therein for connection to said water supply; and
said cabinet having therein quick release means for storing a length of flexible plastic hose, one end of which is connected to said water inlet and control means, the other end having a nozzle thereon, wherein said quick release and storage means comprises a support plate pivotally attached to the upper portion of the back wall of the installed cabinet, a plurality of upwardly sloping pegs to support an equal plurality of loops of said hose, and catch means pivotally mounted above said support plate and a catch actuating rod attached to the upper portion of the inner surface of said cover whereby when said cover is closed, said actuating rod will release said catch from said support plate to allow said plate to pivot forward until said pegs come in contact with the inner surface of said closed cover thereby retaining said hose on said pegs until such time as said cover is opened when said support plate will pivot forward to discharge said loops of hose from said cabinet.

4,380,270

TOOL DEVICE

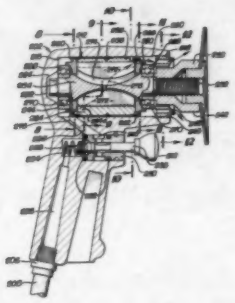
David Ludwig, St. Louis, Mo., assignor to Allan Air Products, Inc., St. Louis, Mo.

Filed Jan. 23, 1981, Ser. No. 227,754
Int. Cl.³ F03B *13/00*
U.S. Cl. 173—163 **1 Claim**

1. A tool device comprising:
(a) a body defining a bore having a first barrier wall end and second open end;
(b) a tool holder and motor assembly joined to said body and extending into said bore, said assembly including (i) means for joining a tool to said assembly, said tool joining means extending out of said open end of said bore, (ii) elongated rotary motor means having first and second ends, said motor means joined to said tool joining means for rotating said tool joining means, said motor means further having

a plurality of radially disposed movable vane members, and (iii) first and second end plates disposed on said motor means at each end thereof, said first end plate located adjacent said barrier wall end of said bore and having inlet openings for directing a fluid into said motor means and said second end plate located adjacent said open end of said bore and having outlet openings for directing fluid out of said motor means and toward said open end of said bore;

(c) means in said body for directing a fluid to said motor



means adjacent said barrier wall and through said first end plate; and

(d) means a ring member circumferentially disposed about said tool joining means and securing said assembly in said body, said ring member joined to said body adjacent said open end of said bore and having a plurality of openings in flow communication with and adjacent to said outlet openings on said second end plate,

whereby fluid is directed from said barrier wall end of said bore, through said motor means, and out said open end of said bore.

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EARTH AUGER WITH REMOVABLE CUTTING TOOTH SUPPORT STRUCTURE

Donald R. Baker; Thomas R. Barr, and Paul C. Smith, Jr., all of Denison, Tex., assignors to Blue Streak Industries, Inc., Denison, Tex.

Filed Apr. 17, 1981, Ser. No. 255,129
Int. Cl.³ E21B *10/44*
U.S. Cl. 175—391 **6 Claims**

1. An earth drilling tool for use with cutting teeth each having a shank portion and an enlarged body portion with cutting edges and integral with one end of the shank portion comprising:

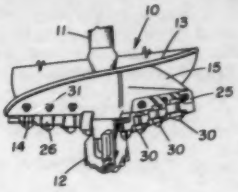
an upstanding axial stem having a bottom pilot bit attached to the bottom of said stem,

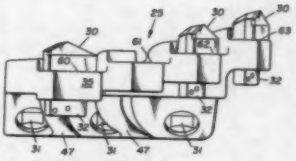
a downwardly spiraling flight structure affixed to said axial stem and having a leading edge terminating in the vicinity of said pilot bit, and

cutting teeth holder structure removably secured to said leading edge of said flight structure and extending from a position adjacent said stem above said pilot bit to a position approximate to the perimeter of said flight structure,

said holder structure having a plurality of spaced apart pockets extending through said structure for receiving shank portions of cutting teeth whereby the shank portions will pass through the pockets from one side of the structure to the other side,

said holder structure including reinforcing webs having raised ends proximate to each of the cutting tooth receiving pockets for engagement with the body portion of the cutting teeth and extending to a position for contact with





the leading edge of said flight structure to provide back supports for cutting teeth.

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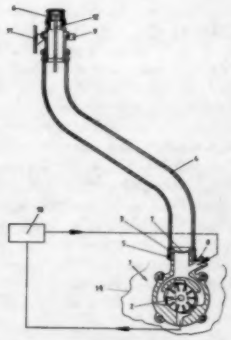
OIL RESERVOIR PARTICULARLY FOR HYDRAULIC STEERING SYSTEM

Johann Merz, Bopfingen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Fed. Rep. of Germany

Filed May 1, 1980, Ser. No. 145,796
Claims priority, application Fed. Rep. of Germany, May 19, 1979, 2920321
Int. Cl.³ B62D *5/06*
U.S. Cl. 180—132 **8 Claims**



1. In an automotive vehicle having an engine compartment enclosing a fluid powered mechanism (10) to which pressurized fluid is supplied by a vehicle engine driven pump (1) having an intake fitting (3), and a fluid reservoir enclosing a required storage volume from which the fluid is exclusively withdrawn by the pump, the improvement residing in said fluid reservoir being formed by an elongated flexible hose (4) having opposite open ends between which said required storage volume of the fluid is confined, clamp means (5) connecting one of said ends of the hose to the intake fitting of the pump, means (9) fixedly anchoring the hose adjacent the other end thereof at an accessible location (11) above the pump within the engine

compartment, and a removable cap (6) closing said other end of the hose adjacent said accessible location.

4,380,273

SPUR RACK HYDROSTEERING

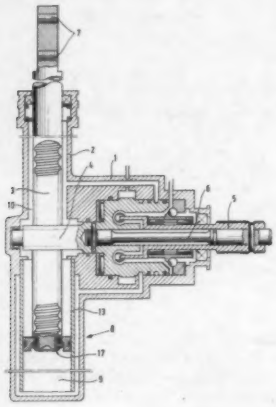
Wolfgang Walter, Schwabisch Gmund, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

Filed Aug. 1, 1980, Ser. No. 174,555

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1979, 2931184

Int. Cl.³ B62D *5/008;* F16J *9/002*

U.S. Cl. 180—132 1 Claim



1. In a hydrosteering device having a housing (1), a rack (3) and a double-acting piston assembly (8) mounted on the rack, and means for sealing pressure spaces within the housing from each other on opposite axial sides of the piston assembly, the improvement comprising a stop surface (14) formed on the rack, a relatively rigid piston ring (11) exposed to pressures in both of said pressure spaces, mounting means (15,16) assembled on the rack for floating support of the piston ring with axial clearance (20) relative to said stop surface, and relatively flexible means (12) mounted on the piston ring for engagement with the housing in response to radially outward displacement of the piston ring by said pressures exerted thereon, said mounting means comprising a reduced diameter end portion on the rack extending axially from the stop surface, a mounting ring (15) having a stop portion (21) axially spaced from the stop surface, elastic support means (16) on the end portion of the rack axially between the stop surface and the stop portion for floating support of the piston ring, and fastening means (17) on the end portion of the rack for holding the mounting ring in axial abutment with the stop surface.

4,380,274

HOLDING A PLANETARY GEAR CARRIER RELATIVE TO AN AXLE

Uwe Abraham, Mittelstr. 18, 4350 Recklinghausen; Karl-Heinz Jakubowski, Tilsiter Str. 22, 4620 Castrop-Rauxel, and Wilhelm Köster, Hagemer Kirchweg 11, 4354 Datteln, all of Fed. Rep. of Germany

Filed Apr. 22, 1981, Ser. No. 256,677

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1980, 3015818

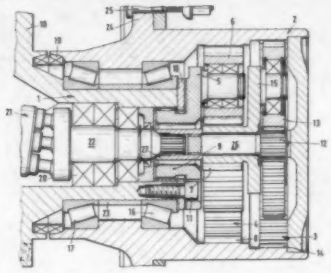
Int. Cl.³ B60K *7/00*

U.S. Cl. 180—308 4 Claims

1. Connection of a hollow shaft to a planet gear carrier for preventing the carrier from turning relative to the shaft having an internal spline gearing near one end, comprising:

a sleeve being secured to or integral with said planet gear carrier, the carrier resembling a flange at the sleeve, the sleeve being provided with an external spline, there being an annular recess between the spline and the carrier;

said shaft having an end portion provided with an internal spline, for coupling with the external spline of said sleeve; and



a gear disk having internal teeth and being disposed so that the teeth extend into the recess, the teeth being aligned with ridges of said external spline, the disk being releasably secured to said shaft, an axial length of the recess being larger than the thickness of said disk, so that the carrier can axially move relative to the shaft and the disk over a limited range.

4,380,275

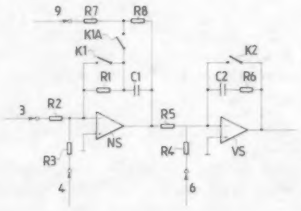
APPARATUS FOR INTERFACING WEIGHING DATA WITH A LIFT CONTROL SYSTEM

Matti Kähkipuro, Hyvinkää, Finland, assignor to Elevator GmbH, Baar, Switzerland

Filed Jun. 24, 1981, Ser. No. 277,021

Int. Cl.³ B66B *1/44*

U.S. Cl. 187—29 R 1 Claim



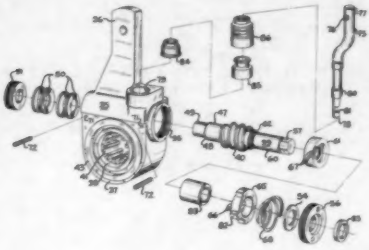
1. Apparatus for interfacing weighing data with a lift control system that has been carried out with an operator amplifier circuit comprising a speed controller amplifier (NS) of which the plus terminal has been connected to ground and at the minus terminal enter the speed set-point value and the current speed value and further from the minus terminal has been connected to the output of the speed controller amplifier a stabilizing resistor (R1), a stabilizing capacitor (C1), a start switch (K1) which short-circuits the stabilizing resistor (R1), and an auxiliary start switch (K1A) which connects the juncture of the stabilizing resistor (R1) and capacitor (C1) to the terminals of the weighing data resistors (R7) and (R8), the other end of the latter weighing datum resistor (R8) being connected to the output of the speed controller amplifier (NS) and to the other end of the foremost weighing datum resistor (R7) being connected the external weighing datum.

4,380,276

SLACK ADJUSTER FOR VEHICLE BRAKES

Roger Sweet, Fowlerville, and Leonard T. Tribe, Ann Arbor, both of Mich., assignors to Kelsey-Hayes Co., Romulus, Mich.

Filed Jul. 21, 1980, Ser. No. 167,308
Int. Cl.³ F16D 65/56
U.S. Cl. 188—79.5 K **4 Claims**



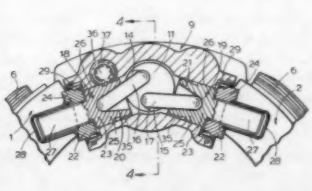
1. A slack adjuster for connecting an air actuated piston rod to rotate a cam shaft in a vehicle brake system comprising a housing, a worm gear mounted to rotate in said housing, means for connecting said worm gear to the cam shaft, said worm gear and said cam shaft rotating together about a first axis, a shaft mounted in said housing to rotate about a second axis perpendicular to said first axis, said shaft having first and second ends and defining a worm intermediate said ends engaged with said worm gear, a drive and a coupling each mounted coaxially to rotate on said shaft, ratchet means interconnecting said drive and said coupling for allowing said drive to rotate about said shaft axis relative to said coupling in only one direction, slip means interconnecting the coupling and said shaft, said slip means slipping when a predetermined rotational force is exerted between said coupling and said shaft, clevis means connecting said housing to the piston rod at a predetermined point spaced from said first axis, a link connected to said clevis means at a point spaced from the connection between said clevis means and said housing, and means interconnecting said link and said drive for rotating said drive and said coupling as the vehicle brakes are applied.

4,380,277

AUTOMATIC SLACK ADJUSTERS FOR VEHICLE SHOE-DRUM BRAKES

Brian Ingram, Warwickshire; David A. Harries, and Michael J. England, both of West Midlands,, England, assignors to Lucas Industries Limited, Birmingham, England

Filed Oct. 9, 1980, Ser. No. 195,428
Claims priority, application United Kingdom, Oct. 10, 1979, 7935130; Dec. 13, 1979, 7943037
Int. Cl.³ F16D 51/00
U.S. Cl. 188—329 **8 Claims**



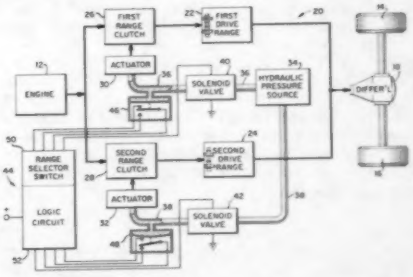
1. A vehicle shoe-drum brake of the one-leading, one-trailing shoe-drum simplex type comprising a rotatable drum, a relatively stationary torque-plate, brake shoes mounted on said torque plate and carrying friction linings for engagement with said rotatable drum, an actuating cam disposed between adjacent ends of said shoes, a cam shaft carrying said cam and which is journalled in said torque plate for rotation about a fixed axis to enable said cam to separate said adjacent ends of said shoes, and a slack adjuster, said slack adjuster comprising a housing mounted on said torque plate and fixed relative to said shoes, a pair of thrust assemblies guided to slide axially in bores in said housing, each said thrust assembly being adapted to act between said cam and said end of a respective one of said shoes, and each said thrust assembly comprising first and second interengaged screw-threaded members which are relatively rotatable to increase the effective length of said thrust assembly to compensate for wear of said friction lining of said respective one shoe, a rigid strut interposed between said cam and each said second member and through which said cam acts on said thrust assemblies to separate said adjacent ends of said shoes in response to rotation of said cam shaft, complementary recesses of part-spherical outline in said cam and in said second members and in which opposite ends of said struts have rocking engagements, means for holding each said first member against rotation with respect to said end of said respective shoe, and gear teeth provided on each said second member, a drive mechanism in constant meshing engagement with said gear teeth of both said second members so that both said second members are adapted to rotate together whereby the effective lengths of both said assemblies are increased by equivalent amounts, and means for rotating at least one of said second members when adjustment to compensate for wear is required.

4,380,278

MULTIPLE CLUTCH CONTROL SYSTEM EMPLOYING CLUTCH STATUS MONITOR

Richard D. Lasken, Bartlett, Ill., assignor to International Harvester Co., Chicago, Ill.

Filed Mar. 6, 1981, Ser. No. 241,264
Int. Cl.³ B60K 41/22; F16D 25/10
U.S. Cl. 192—3.58 **18 Claims**



1. In a rotary power transmission of the type having a plurality of gears and first and second clutches cooperating with said gears for shifting the transmission from a first gear ratio to a second gear ratio by engaging the first clutch and disengaging the second clutch after a transitory operational period of clutch overlap, the improvement comprising means responsive to the engagement of said first and second clutches for preventing said first and second clutches from being simultaneously engaged for more than a predetermined time interval, said simultaneous engagement preventing means having monitor means (**48,84,87,80** pin **5**) effective to afford operation thereof and connected to continuously monitor the second clutch, throughout said predetermined time interval, for failure to in fact disengage therewithin, whereupon the monitor means is effective so as to afford the desired operation of the simultaneous engagement preventing means.

4,380,279

VISCOUS FLUID COUPLING DEVICE

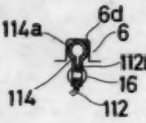
Hiroto Masai, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 4, 1980, Ser. No. 213,024

Claims priority, application Japan, Dec. 26, 1979, 54-180878[U]

Int. Cl.³ F16D 35/00, 43/25

U.S. Cl. 192—58 B 3 Claims



1. A viscous fluid coupling comprising:

a drive member;

a casing member rotatably mounted on said drive member and provided with a fluid working chamber and a fluid reservoir wherein said casing member has an insert depression formed therein;

a rotor fixed to said drive member and located in said fluid working chamber and rotatable relative to said casing member;

a shaft rotatably and sealingly mounted on said casing member;

a valve plate fixed to an inner end of said shaft and operable to control fluid communication between said fluid working chamber and said reservoir;

a helically wound bimetal element located on an exterior portion of said casing member, said bimetal element having an inner end portion connected to an outer end of said shaft and an outer end portion of said bimetal element being connected to a portion of said casing member; and

a resilient member having a rigidity less than the rigidity of said bimetal element and made of leaf spring steel and located between said outer end portion of said bimetal element and said casing member, wherein said resilient member further comprises a hair-pin shaped member having a round head and being fixed to said outer end portion by means of a rivet and located in said insert depression formed on the casing at said round head of said resilient member.

4,380,280

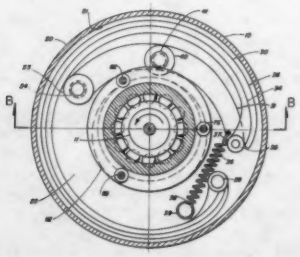
CAM OPERATED FRICTION CLUTCH

John D. Walters, Rte. 1, Box 244H, New Orleans, La. 70129

Filed Jan. 2, 1979, Ser. No. 107

Int. Cl.³ F16D 13/14, 13/75

U.S. Cl. 192—78 10 Claims



1. An improved externally engagable clutch having cam actuated expandable clutch shoe means for frictional coupling to clutch drum means, wherein the improvement comprises:

multiple face cam means wherein each cam face contact surface is oriented essentially parallel to the axis of rotation of the clutch and each cam face contact surface is positioned axially adjacent to each other; and

cam follower means rotatably mounted in a plane essentially perpendicular to the axis of rotation of the clutch and operably connected to the expandable clutch shoe means for expanding it into contact with the clutch drum means, said cam follower means and said multiple face cam means being laterally displaceable relative to each other and the axis of rotation of the clutch.

4,380,281

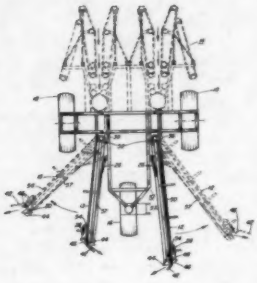
ASSOCIATED RUNNING GEAR AND PILER IMPROVEMENTS IN A TWO ROW HARVESTER AND PILER

Richard A. Duncan, Thibodaux, La., assignor to Cane Harvest Inc., Thibodaux, La.

Filed Dec. 12, 1980, Ser. No. 215,999

Int. Cl.³ B65G 41/00, 65/06

U.S. Cl. 198—304 3 Claims



1. In a two row harvester and piler, associated running gear and pilers comprising:

(a) tricycle running gear, having two fixed front wheels and a smaller centered and steerable rear wheel, fixed as a movable supporting part of said harvester and piler for moving it from plact to place;

(b) similar front wheel hydraulic motor means for driving said front wheels;

(c) rear wheel hydraulic motor means, smaller than said front wheel motor means, for driving said rear wheel;

(d) variable volume, two way hydraulic pump means connected to said front and rear wheel hydraulic motor means in closed loop and parallel hydraulic systems for supplying said wheel motor means with pressure fluid in volumes to rotate said wheels to move said harvester at common linear speeds, and at pressures in combination with relative difference in sizes of front and rear wheel motor means to rotate said front wheels with greater torque than said rear wheel;

(e) piler means pivotally mounted on said tricycle running gear behind and inboard of said fixed front wheels to extend on each side of said centered rear wheel and rear wardly therebeyond for piling cut cane behind and to respective sides of said tricycle running gear.

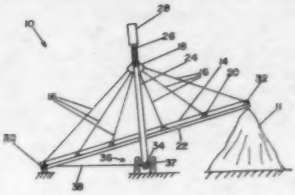
(f) cane fall directing means pivotally mounted on each of the free ends of said piler means for defining therebetween movable cut cane exit terminals and directing fall of cane therefrom; and

(g) auxiliary hydraulic power means mounted on said tricycle running gear for pivoting said piler means to respective positions for piling behind and to the sides of said harvester and for conforming cane fall directiing means to said piling positions.

4,380,282
CABLE SUSPENDED CONVEYOR

Hans de Bruijn, Lancaster, Pa., assignor to Aggregates Equipment, Inc., Leola, Pa.

Filed Mar. 13, 1981, Ser. No. 243,459
Int. Cl.³ B65G 21/10
U.S. Cl. 198—318 10 Claims



1. In a stacker for moving aggregate material to and from piles of varying heights wherein a mast located between the ends of a conveyor supports the conveyor at varying angles to the horizontal, the conveyor is anchored at its lower end by a convcyor pivot point, the conveyor is supported from the mast and raised and lowered by cables, and the lower end of the mast is restrained to prevent radial movement relative to the conveyor pivot point, the improvement comprising:

the mast oriented at an angle to the vertical with its top end leaning in toward the conveyor pivot point and the mast anchored at its lower end at a mast pivot to permit variations in its angle to the vertical;

the conveyor suspended from the mast by cables of non-varying length, with the vectors of the forces on all the cables converging at a single point and the cables attached to a cable anchor means;

a cable anchor means located on and movably attached to the mast to permit raising and lowering of the cable anchor means on the mast;

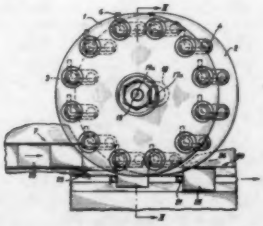
a motor means attached to the cable anchor means and capable of raising and lowering the cable anchor means on the mast; and

a radial force means attached near the lower end of the mast to maintain an inward force on the lower end of the mast.

4,380,283
DEVICE FOR PUSHING OBJECTS OFF A CONVEYOR

Johannes D. van Maanen, Berkel, Netherlands, assignor to Tevopharm-Schiedam B.V., Schiedam, Netherlands

Continuation of Ser. No. 60,002, Jul. 24, 1979, abandoned, which is a continuation of Ser. No. 821,945, Aug. 4, 1977, abandoned. This application Feb. 27, 1981, Ser. No. 239,027
Int. Cl.³ B65G 47/31
U.S. Cl. 198—456 3 Claims

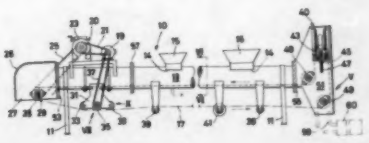


1. A device for pushing objects having a length l and a width b and lying end to end on a conveyor, essentially horizontally off from said conveyor one at a time so that they become separated from each other, said device comprising: two discs arranged parallel to and in spaced relationship to each other and one on top of the other, said discs being rotatable about axes of rotation extending perpendicular to their centers, said axes being disposed in a substantially vertical plane extending in spaced relationship parallel to said conveyor and said axes being offset with respect to each other in said vertical plane, a plurality of first pins situated at equal distances from each other and pivotally secured in the upper one of said two discs at equal distances from the center of said upper disc and relatively near the circumference of said upper disc, a plurality of second pins corresponding in number to said plurality of first pins and being pivotally secured in the lower one of said two discs relatively near its circumference and at the same radial distances from its center as the first pins are from the center of the upper disc, a plurality of connecting members respectively connecting the lower ends of the plurality of first pins with the upper ends of the plurality of second pins, said second pins extending through said lower disc, a plurality of push plates respectively connected to the lower ends of said second pins, each of said push plates forming one leg of a rectangularly bent plate, the other leg of said bent plate being directed transverse to said conveyor, each of said push plates having a length not exceeding the length l of the objects to be pushed off, the distances in a straight line between the center lines of the second pins equaling said length l of the objects, said discs overlapping said conveyor to such an extent that when the discs are rotating the push plates will brush over the conveyor over a distance at least equal to said width b of the objects, the radial distance between each pin and the center of the disc to which it is connected exceeding $(4b^2 + l^2)/8b$.

4,380,284
CHIP CONVEYER

Takeshi Ito, Tama; Shuzo Ishizuka; Keiichi Goto, both of Sagamihara, and Keiki Saito, Yokohama, all of Japan, assignors to Caterpillar Mitsubishi Ltd., Japan

Filed Sep. 22, 1980, Ser. No. 189,297
Claims priority, application Japan, Sep. 28, 1979, 54-135582[U]
Int. Cl.³ B65G 45/00
U.S. Cl. 198—494 9 Claims



1. A chip conveyor for receiving metal chip material at a multitude of feed openings and transmitting said chip material to a discharge gate comprising,

a cylindrical, lengthy trough substantially closed continuously along its length and having a discharge gate at one end and a plurality of hoppers for receiving said chip material disposed between both ends of said trough,

a plurality of endless chains running within the lower part of said trough in its loaded run and running outside of said trough in its return run,

means for tensioning said chains disposed at one end of said trough,

a driving means for driving said chains, and

a cam means for giving vibration to said chains disposed outside of said trough and powered by said driving means.

4,380,285

APPARATUS FOR ALIGNING CHIPS DURING THE MANUFACTURE OF CHIPBOARDS

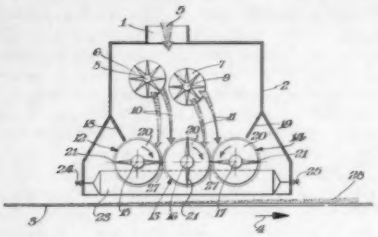
Wolfgant Bürkner, and Franz-Josef Ebert, both of Darmstadt, Fed. Rep. of Germany, assignors to Carl Schenck A.G., Fed. Rep. of Germany

Filed Jan. 28, 1981, Ser. No. 229,102

Claims priority, application Fed. Rep. of Germany, May 16, 1980, 3018683

Int. Cl.³ B65G 47/18

U.S. Cl. 198—533 10 Claims



1. An apparatus for aligning particles in a preferred longitudinal direction on a moving substrate comprising a housing having an inlet and an outlet, the outlet being disposed above the moving substrate, a set of parallel substantially vertical aligning plates spaced from each other being mounted immediately within the outlet, sets of solid discs flanked by spiked discs being rotatably mounted above the set of aligning plates and substantially parallel to the preferred longitudinal direction and the sets of discs being spaced from each other and disposed at least in part above and over the aligning plates, whereby the particles are fed to the aligning plates in a substantially aligned manner which is maintained by the aligning plates.

4,380,286

CONVEYOR SYSTEM FOR BAR-SHAPED ARTICLES, PARTICULARLY CIGARETTES

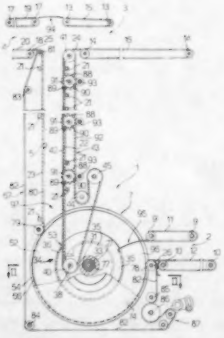
Enzo Seragnoli, Bologna, Italy, assignor to G. D. Societa' per Azioni, Bologna, Italy

Filed Nov. 5, 1980, Ser. No. 204,344

Claims priority, application Italy, Nov. 14, 1979, 3542 A/79

Int. Cl.³ B65G 15/14

U.S. Cl. 198—605 12 Claims



1. A conveyor system for bar-shaped articles, particularly cigarettes, comprising at least one inlet, an exit, a channel connecting said inlet to said exit, and ffed means disposed along said channel to move said articles along it from said inlet to said exit, said channel comprising a substantially vertical portion connected upperly to said exit, characterized in that said channel also comprises a substantially U-shaped curved portion with its concavity facing upwards, of which a first end communicates with said inlet and the second end communicates with the lower end of said vertical portion; and said feed means comprise a first conveyor belt defining an outer curved wall of said curved portion and a first wall of said vertical portion, a second conveyor belt mobile at the same speed as said first conveyor belt and defining, at least partly, a second wall of said vertical portion facing said first wall, and a rotatable drum constituting a support for said first conveyor belt along said curved portion and rotatable by said first conveyor belt; said drum defining an inner curved wall of said curved portion which faces and is parallel to said outer curved wall, and is in bar-shaped article delivery communication with said second wall.

4,380,287

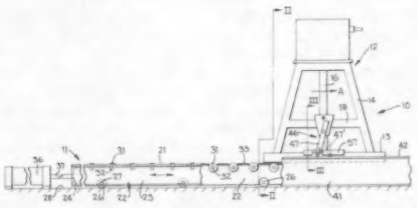
OSCILLATING-ACCUMULATING CONVEYOR SYSTEM

William L. Smock, 5831 S. Meridian St., Indianapolis, Ind. 46217

Filed Dec. 8, 1980, Ser. No. 213,796

Int. Cl.³ B65G 37/00

U.S. Cl. 198—648 17 Claims



1. In a conveyor system including a horizontally elongated conveyor unit having a plurality of parallel spaced-apart freely-rotatable conveyor rolls, driving means for cyclically reciprocating the conveyor unit back and forth in the elongated direction thereof through a predetermined stroke, and a skid adapted to be conveyed by said conveyor unit, said skid including a base rollingly supported on said conveyor rolls, the improvement comprising:

elongated stationary reaction means positioned adjacent said conveyor unit and extending longitudinally therealong;

one-way holding means mounted on said skid and coacting with said reaction means for permitting said skid to be moved forwardly during the forward stroke of said conveyor unit while preventing rearward movement of the skid during the rearward stroke of said conveyor unit, whereby the skid is intermittently advanced in a steplike manner along the conveyor unit due to the cyclic reciprocation thereof; and

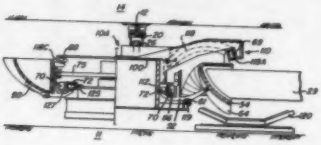
means mounting said one-way holding means on said skid for permitting said holding means to be selectively moved between first and second positions relative to said skid when the latter is supported on said conveyor unit, said holding means when in said first position coacting with said reaction means for causing the skid to be unidirectionally stepped in one direction along the conveyor unit in response to the cyclic reciprocation thereof, and said holding means when in said second position coacting with said reaction means for causing the skid to be unidirectionally stepped in the opposite direction along the conveyor unit in response to the cyclic reciprocation thereof.

4,380,288

CONVEYOR

Theodore B. Bodimer; Joseph S. David, both of Franklin, and Alexander W. Calder, Pittsburgh, all of Pa., assignors to Joy Manufacturing Company, Pittsburgh, Pa.

Continuation of Ser. No. 701,770, Jul. 2, 1976, abandoned. This application Dec. 19, 1977, Ser. No. 862,254
Int. Cl.³ B65G 15/08
U.S. Cl. 198—820 5 Claims



1. A conveying apparatus comprising: an elongated frame including an elongated, endless guide means; a conveying means coextensive with said guide means and including an endless, troughed conveying element and a support means; said conveying means being orbitally movable with respect to said guide means through an elongated endless path located laterally adjacent said guide means in such a manner that seriatim portions of said conveying element traverse, in sequence, at least a first elongated portion of said endless path, a discharge portion of said endless path and a second elongated portion of said endless path, wherein a major extent of said first and second elongated portions of said endless path extend longitudinally adjacent the respective laterally opposite sides of said frame, said support means being cooperable with said guide means and said conveying element for cantilever support of said conveying element with respect to said guide means at least during movement of said conveying means through said first elongated portion of said endless path; and said support means including a portion thereof cooperable with said guide means and said conveying element to provide support for said seriatim portions of said conveying element with respect to said guide means during traverse thereby of said elongated and said discharge portions of said endless path and to effect movement of said seriatim portions of said conveying element from a first orientation thereof to a second orientation thereof for discharge of material from said seriatim portions during traverse thereby of said discharge portion of said endless path.

4,380,289

PAPERBOARD DISPENSER PACKAGE WITH REMOVABLE SCOOP PANEL

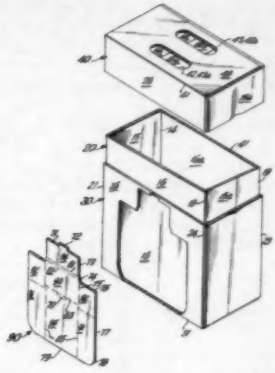
Stanley K. Bigelow, St. Joseph, Mo., assignor to Champion International Corporation, Stamford, Conn.

Filed Nov. 19, 1981, Ser. No. 322,773
Int. Cl.³ B65D 77/00
U.S. Cl. 206—216 16 Claims

1. A rectangular-shaped paperboard dispenser package comprising:

an inner compartment formed from first and second opposed pairs of substantially rectangular, upstanding inner side panels that are alternatively foldably connected, each of said inner side panels including a horizontally disposed, substantially rectangular inner bottom flap foldably connected to the bottom edge thereof, said inner bottom flaps being folded to form the bottom surface of said inner compartment; and

an outer compartment formed from first and second opposed pairs of substantially rectangular, upstanding outer side panels that are alternatively, foldably connected, each outer side panel including a horizontally disposed, substantially rectangular outer bottom flap foldably connected to the bottom edge thereof, said outer bottom flaps being folded to form the bottom of said outer compartment, each outer side panel further including a horizontally disposed substantially rectangular outer top flap foldably connected to the top edge thereof and folded to form the top of said outer compartment, one outer side panel including a removable scoop panel for forming a scoop, said scoop panel comprising a substantially rectangular bottom surface, a first side wall foldably connected to a first edge of said bottom surface, a second side wall having substantially the same configuration as said first side wall and being foldably connected to a second edge of said bottom surface, wherein the second edge of the bottom surface is opposite the first edge thereof, first and second substantially rectangular end flaps foldably connected to said first and second side walls, respectively, said foldable connection between said side walls and said end flaps being substantially perpendicular to said foldable connection between said side walls and said bottom surface, a substantially rectangular exterior end wall foldably connected to a third edge of said bottom surface and disposed between said end flaps, a substantially rectangular interior end wall foldably connected to the edge of said exterior end wall opposite said bottom surface, said end walls being adapted to foldably engage said end flaps to secure said end flaps in perpendicular disposition to both said bottom surface and said side walls for forming said scoop panel into a scoop.



4,380,290

SHIPPING AND STORAGE CONTAINER

Randall A. Luebke, 311 5th St., Huntington Beach, Calif. 92648

Filed Apr. 9, 1981, Ser. No. 252,384
Int. Cl.³ B65D 25/04
U.S. Cl. 206—315 R 6 Claims

1. A shipping, storing and carrying container comprising:

an elongated, monolithic, tubular housing having oppositely disposed open ends;

a pair of cap members adapted to be removably mounted to said housing, to cover each of said open ends thereof;

a releasable locking means positioned between said cap

members and said housing, to lock said cap members to said housing;

a slidably adjustable partition positioned within said housing;

a first and second chamber in said housing defined by said partition;

means for adjusting said partition to a selected position within said tubular housing;

means for securing said partition in said selected position;

each of said cap members comprising:

a closure wall having an outwardly projecting peripheral flange member;

a peripheral rib formed in said closure wall adjacent said peripheral-flange member, thereby defining a peripheral groove adapted to receive said open end of said housing therein; and

a slot disposed in said closure wall, to allow said adjusting means of said partition to extend outwardly from said housing;

wherein said adjustable means of said partition comprises an elongated longitudinal strap member attached to said partition, wherein the ends of said strap member are passed through said slots in said cap members, and are adapted to be secured to each other on the outer surface of said housing, after said partition is arranged in a selected position, and wherein said securing means is mounted to said strap member.

4,380,291

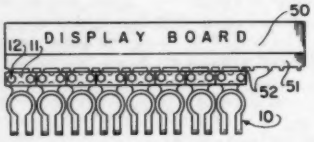
BATTERY TERMINAL CONNECTOR AND METHOD

John K. Shannon, 200 S. Vincennes Cr., Racine, Wis. 53402

Filed Dec. 18, 1980, Ser. No. 217,705

Int. Cl.³ B65D *85/28*

U.S. Cl. 206—343 **18 Claims**



1. A battery terminal having a reinforcement strip for a plurality of terminals which assists in orienting the strip for casting metal thereabout to form a plurality of severable terminals comprising, in combination,

an interior reinforcement strip for a plurality of terminals formed of a conductive metal defining a terminal aperture at a mid-portion,

said reinforcement being formed with a plurality of units terminating in a cable connector portion remote from the terminal aperture,

each cable connector portion being substantially rectangular and having connector holes,

each of said terminals being separated from the adjacent terminals by a line of weakness along an edge portion of the adjacent reinforcement portions formed in said reinforcement strip,

said connector and holes serving to orient the reinforcement in a plurality of mold cavities,

a connector body material formed to encase each of the plurality of members, the size and proportion of which defines the completed terminal connector,

each of said terminals being readily severable from the adjacent unit by breaking along the line of weakness.

4,380,292

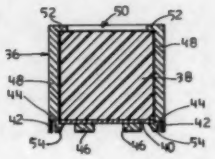
PARENTERAL NEEDLE RECEPTACLE

Kathleen J. Cramer, 4240 Crooked Tree Apt. #7, Wyoming, Mich. 49509

Filed Mar. 10, 1981, Ser. No. 242,345

Int. Cl.³ B65D *85/24*; B65F *7/00*; A61C *17/02*; B65D *81/00*

U.S. Cl. 206—366 **17 Claims**



1. A parenteral needle receptacle comprising:

a base;

a case releasably mounted on said base, said case having walls defining a first open end adjacent said base and also having a second open end opposite to and smaller than said first open end;

means operatively connected to at least one of said base and said case for mounting said receptacle on a supporting object; and

a disposable needle receiving block positioned within and substantially filling said case, said block being sufficiently small to be inserted into said case through said first open end and being larger than said second open end whereby it is retained thereadjacent.

4,380,293

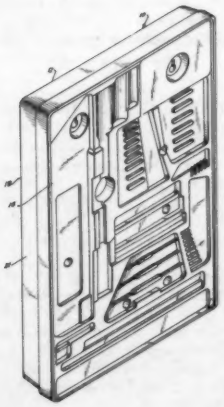
SOCKET WRENCH DISPLAY PACKAGE

Donald G. Wilcox, Seymour, and Nobile Zambrano, Branford, both of Conn., assignors to Show-Pak, Incorporated, New Haven, Conn.

Filed Dec. 15, 1980, Ser. No. 216,327

Int. Cl.³ B65D *73/02*

U.S. Cl. 206—563 **5 Claims**



1. A display package and case comprising a blow molded plastic base having spaced upper and lower walls and a peripheral wall extending therebetween; said upper wall having a first set of a plurality of frustro-conical depressions formed therein open at the upper wall and having bases sealed to said lower wall of the base to provide reinforcement for said walls to rigidify said blow molded base, said upper wall having a

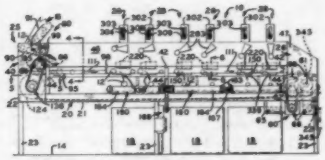
second set of depressions formed therein of predetermined shape defining flat wall portions of said upper wall therebetween all lying on the same plane, said second set of depressions being dimensioned with respect to objects to be received therein such that the outermost surfaces of objects in the depressions lie in said plane, and a transparent cover panel secured to said upper wall and supported on said flat wall portions thereof to hold said objects in said depressions; at least one of said frustroconical depressions having a key hole shaped knock-out formed therein.

4,380,294

APPARATUS FOR ASSORTING ARTICLES ACCORDING TO SIZE

Billy J. Morris, Visalia, Calif., assignor to Industrial Manufacturers of Orosi, Orosi, Calif.

Filed Feb. 5, 1981, Ser. No. 231,661
Int. Cl.³ B07B *13/05*
U.S. Cl. 209—540 **23 Claims**



1. In an apparatus for assorting articles according to size having means for conveying such articles along a predetermined path from a receiving station through a plurality of successive assorting stations, and means at the assorting stations for removing articles from the conveyor of predetermined respective sizes decreasing in the direction of article conveyance; the conveying means comprising:

A. a pair of transversely substantially planar elongated endless belts;

B. means mounting the belts with substantially horizontal edgewardly adjacent upper runs transversely angularly related to form an upwardly disposed article transporting trough therebetween; and

C. drive means for causing the upper runs of the belts to travel longitudinally to transport the articles from the receiving station to the assorting stations.

4,380,295

AUTOMATIC DRILL DEBURRING AND SORTING MACHINE

Mark S. Soderberg, Seattle; Albert L. Hametner, West Seattle; Herman F. Leppink, Renton, and David E. Strand, Seattle, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Apr. 6, 1981, Ser. No. 251,190
Int. Cl.³ B07C *5/00*; B21H *3/10*
U.S. Cl. 209—558 **45 Claims**

1. An automatic drill deburring and sorting machine comprising:

(A) loading station means for loading drills into said automatic drill deburring and sorting machine;

(B) measuring station means for receiving drills from said loading station means and measuring the overall length and diameter of said drills;

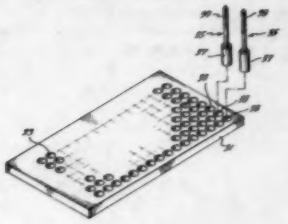
(C) deburring and flute length station means for receiving drills from said measuring station means, deburring the margins of said drills and determining the point on the drill drills where said flutes end;

(D) sorting station means for receiving drills from said deburring and flute length station means and directing said drills into receptacles; and,

(E) control station means connected to said loading station means, said measuring station means, said deburring and flute length station means and said sorting station means for controlling:

(1) the loading of drills into said automatic drill deburring and sorting machine by said loading station means;

(2) the measurement of the overall length and diameter of drills by said measuring station means;



(3) the deburring of drills and the determination of the point on said drills where the flute ends by said deburring and flute length station means; and,

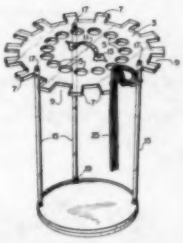
(4) the directing of drills into receptacles by said sorting station means.

4,380,296

YARN HOLDER AND METHOD OF SEPARATING YARN BY COLOR

James F. Murray, and Geneva A. Murray, both of 4808 Sipple Ave., Baltimore, Md. 21206

Filed Jan. 16, 1981, Ser. No. 225,732
Int. Cl.³ B07C *7/04*; B65D *85/00*
U.S. Cl. 209—704 **7 Claims**



1. A yarn holder comprising:

(a) a substantially circular disc,

(b) a plurality of substantially circular holes formed in said disc, each of said holes being located substantially on a radius and being substantially equidistant from each other,

(c) a plurality of substantially radial tabs, equal in number to the holes located substantially on radii adjacent to respective holes, and

(d) a plurality of elongated posts having one end thereof secured to the bottom of said disc, and a base secured to the other ends of said posts.

4,380,297

PIPE STORAGE SYSTEM

Robert Frias, Odessa, Tex., assignor to Ingram Corporation, New Orleans, La.

Filed Feb. 27, 1980, Ser. No. 125,159
Int. Cl.³ B65G *1/10*; E21B *19/14*
U.S. Cl. 211—60 S **28 Claims**

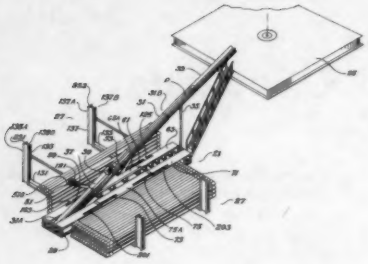
1. A storage apparatus for holding lengths of pipe or the like comprising:

a pair of vertical stanchions secured in place in spaced relation,

a plurality of pairs of horizontal rails for supporting a plurality of rows of pipe, each said rail having first and second ends,

each said pair of rails being adapted to be coupled to said pair of stanchions respectively such that each pair of rails is at a different level and said plurality of pairs of rails from two vertical rows of rails,

each said vertical rows of rails being coupled at said first end to one of said stanchions,



each said pair of rails being adapted to support a row of pipe and to be supported by a lower row of pipe, and

each said stanchion comprising structure which acts as a guide to allow said rails coupled thereto to be moved upward or downward to different levels, and

each said stanchion comprising two parallel upright members providing a vertical slot for slidingly receiving said first end of said rails, and a guide means for preventing horizontal movement of said rails beyond said guide means.

4,380,298

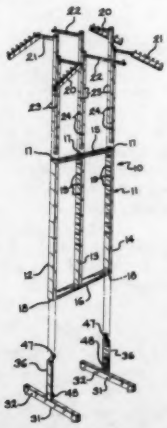
KNOCK DOWN STORE DISPLAY FIXTURE

Robert G. Harig, Paragould, Ark., assignor to Darling Store Fixtures, Paragould, Ark.

Filed Mar. 2, 1981, Ser. No. 239,451

Int. Cl.³ A47F 5/00

U.S. Cl. 211—189 **8 Claims**



1. In a display fixture having a frame and at least one base, said frame including at least one hollow upright having a rectangular cross-section and an open bottom, such upright opening having a predetermined width and a predetermined depth, an improved joint for attaching said base to said frame comprising a rigid elongated flat strap having two sides and two ends, means attaching one of said strap ends to said base with said strap extending longitudinally upwardly from said base, said strap having a width slightly less than said predetermined width for telescoping from the open bottom into the upright opening with one of said strap sides abutting an interior side of said upright, two clips extending from the other of said strap sides with one of said clips located at the end of said strap spaced from said base and the other of said clips located near said base, each of said clips and said strap having a combined maximum depth slightly greater than said predetermined depth for an interference fit within the upright opening, whereby, when said strap is telescoped into the upright opening, said strap and the attached clips frictionally engage said upright.

4,380,299

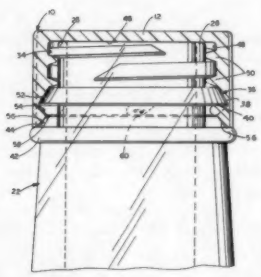
TAMPER PROOF CLOSURE

Santos A. A. Alejandro Llera, Rio Piedras, P.R., assignor to Precision Plastic Products Corporation, Toa Baja, P.R.

Filed Sep. 10, 1980, Ser. No. 185,889

Int. Cl.³ B65D 43/14

U.S. Cl. 215—252 **26 Claims**



1. A tamper proof closure for use in combination with a container with a neck finish having a threaded portion and a retaining means therebelow having a bottom surface, said closure comprising:

a body having a substantially straight side wall having an inner surface with an internally threaded portion located on said inner surface and a breakaway portion therebelow;

a frangible portion connecting said breakaway portion to said side wall;

said breakaway portion adapted to slide over said retaining means as the closure is threaded onto the container and having a ring adapted to be disposed below of and adjacent to said retaining means when said closure is fully threaded onto the container;

said ring having located thereon at least one locking means adapted to engage the bottom surface of the retaining means to secure the closure in place when the closure is fully threaded onto the container;

whereby when the closure is unthreaded from the container, the breakaway portion will be severed from the body at the frangible portion by the retaining means acting on the ring leaving said breakaway portion on said container as an indication of tampering.

4,380,300

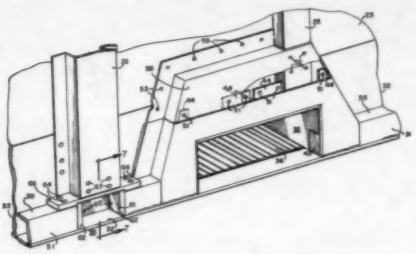
AIR CARGO CONTAINER

Elton E. Mountz, Morgantown, and Paul H. Martin, East Earl, both of Pa., assignors to Morgan Trailer Mfg. Co., Morgantown, Pa.

Continuation of Ser. No. 122,139, Feb. 19, 1980, abandoned. This application Aug. 3, 1981, Ser. No. 289,407

Int. Cl.³ B65D 25/00

U.S. Cl. 220—1.5 5 Claims



1. In an air cargo container having a plurality of enclosing walls including a bottom wall with fork lift receiving openings on at least one side, the improvement which comprises

protective means for said openings having fork lift tongue impact resistant upright outer wall portions extending outwardly from said openings to protect said container,

said protective means comprises a lower casting through which one of said openings extends,

said lower casting is fixedly mounted on said container, and

an upper casting is mounted above said lower casting and is detachably secured to a portion of the container.

4,380,301

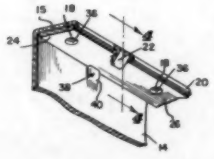
STAKED REINFORCED STRIPS

Norman L. Eisman, Columbus, Ind., assignor to Arvin Industries, Inc., Columbus, Ind.

Filed Dec. 24, 1980, Ser. No. 219,978

Int. Cl.³ B65D 6/36; F16N 31/00

U.S. Cl. 220—73 15 Claims



10. In an oil pan having a side wall, a flange extending outwardly from the side wall for mounting the pan, the flange having a substantially flat, upper planar sealing surface and a substantially flat, lower planar surface opposed to the sealing surface, a reinforcing strip on the surface opposed to the sealing surface, and a mechanical connection for securing the reinforcing strip to the flange, the mechanical connection comprising a tab formed on the outer edge of the flange, and a notch formed in the outer edge of the reinforcing strip and aligned with the tab, the notch defining an opening through the strip, the tab being staked and engaging the notch to secure the strip to the flange.

12. In an oil pan having a side wall, a flange extending outwardly from the side wall for mounting the pan, a reinforcing strip on the flange, and a mechanical connection for securing the reinforcing strip to the flange, the mechanical connection comprising a tab formed on the outer edge of the flange, a notch formed in the outer edge of the reinforcing strip, the tab being staked and engaging the notch in the outer edge of the strip, and a staked segment of the side wall engaging an inner edge of the strip to secure the strip to the flange.

4,380,302

CONTAINER CLOSURE

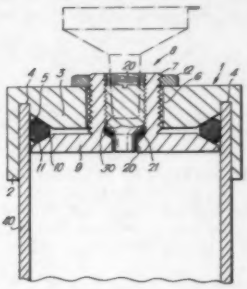
David Broad, Crawley, England, assignor to Fisons Limited, England

Filed Apr. 16, 1981, Ser. No. 254,939

Claims priority, application United Kingdom, Apr. 19, 1980, 8012969

Int. Cl.³ B65D 53/00

U.S. Cl. 220—235 5 Claims



1. A closure cap having an aperture therethrough and adapted to be mounted in sealing engagement upon the open end of a tubular container, said closure cap comprising an outer member having a dependant annular skirt; a dependant central portion which together with the skirt defines an annular recess adapted to receive the open end of the container, the central portion having a substantially central longitudinal bore therethrough; a transverse member mounted substantially co-axially within the outer member and having a longitudinal stem located within the bore in the central portion and axially movable relative to the central portion; the longitudinal stem having a longitudinal bore therethrough which is the aperture of the closure cap, and wherein the aperture has a narrower diameter portion thereof extending for from 5 to 25% of the length of the aperture.

4,380,303

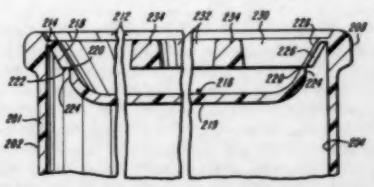
MOLDED CONTAINER AND OPENING MEANS THEREFORE

David O. Allen, Wilmington, and Harry A. E. Wombold, Dayton, both of Ohio, assignors to Buckeye Molding Company, New Vienna, Ohio

Filed Nov. 10, 1980, Ser. No. 205,429

Int. Cl.³ B65D 17/40

U.S. Cl. 220—276 21 Claims



11. A molded one-piece plastic container blank comprising a

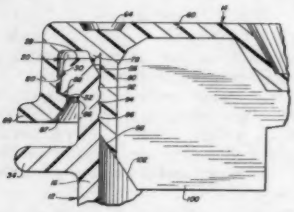
tubular body open at one end thereof and having integrally formed closure means closing the opposite end thereof, said body including a chime surrounding said opposite end, said closure means including a closure panel spaced inwardly of said container from said chime and a relatively thin and thereby weakened first web bridging the space between said chime and said closure panel and having uninterruptedly continuous junctures with each of said chime and said closure panel, said closure panel having an integrally formed side wall which is inwardly convergent from said web, said side wall having an outer surface notched to define a second web spaced from and extending parallel to said first web, said side wall having a groove defining a third web therein extending from said first web to said second web, and pull open means one-piece with said side wall disposed adjacent said third web and manually pullable for rupturing said first, second and third webs.

4,380,304

CONTAINER HAVING AN INTEGRAL HANDLE AN A CLOSURE

George C. Anderson, 212 Coventry Pl., Mt. Prospect, Ill. 60056

Filed Aug. 5, 1981, Ser. No. 290,200
Int. Cl.³ B65D *41/16, 41/18*
U.S. Cl. 220—306 32 Claims



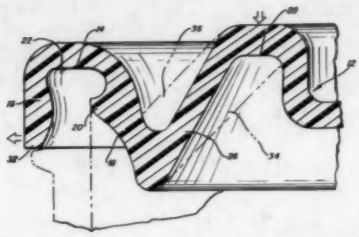
1. A container including a molded resilient plastic vessel having one end open, and a molded resilient plastic cover for removably and sealingly mounting on the open end of the vessel to close the vessel for retaining within the vessel material including liquids wherein: the molded plastic vessel includes; a circular cylindrical wall; a bottom formed integral with one end of the cylindrical wall and the opposite end of the cylindrical wall being the open end; a handle assembly having a portion formed integral with the outer surface of the cylindrical wall adjacent to the open end, said handle assembly including a handle having its opposite ends formed integral with the cylindrical wall, and a top seal formed integral with the cylindrical wall defining the open end of the cylindrical wall, said top seal including, a bead formed integral with the cylindrical wall, a top surface formed integral with the bead, a side defining the outer periphery of the bead, and a lower locking face formed integral with the bead, and said cover including; a circular top; and a cover seal formed integral with the top; said cover seal including; a ring wall formed integral with the outer periphery of the top, an annular inner seal formed integral with the interior surface of the top and being engageable with the top seal of the vessel to form a seal therebetween, an annular peripheral seal formed integral with the interior surface of the ring wall and being engageable with the side of the top seal of the vessel to form a seal therebetween, and an annular lock formed integral with the ring wall and engageable with the lower locking face of the top seal to hold the cover in engagement with the vessel.

4,380,305

MANUALLY REMOVABLE SEAL FOR BUCKETS AND CANS

John W. Von Holdt, 7430 N. Croname Rd., Niles, Ill. 60648

Filed Dec. 10, 1981, Ser. No. 329,258
Int. Cl.³ B65D *41/16, 41/18*
U.S. Cl. 220—306 8 Claims



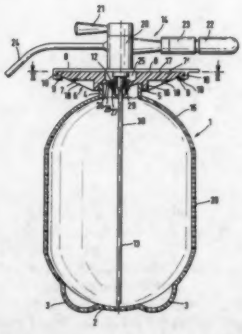
1. A bucket lid made of flexible plastic, said lid defining an annular, peripheral gripping channel for receiving and holding the lip of a bucket, said gripping channel defining an outer and inner wall, said bucket lid also defining an annular inner channel defined by the wall of the lid and projecting outwardly therefrom relative to an attached bucket, said inner channel being positioned radially inside of and adjacent said gripping channel, whereby manual depression of a point of said inner channel causes a portion of the outer wall of the gripping channel to disengage a bucket lip retained in said gripping channel, permitting the lid to be peeled off of the bucket for opening.

4,380,306

SMALL BEER CONTAINER

Klara Knopf, Cologne, Fed. Rep. of Germany, assignor to Karl Horst Knopf, Solingen, Fed. Rep. of Germany

Filed Feb. 12, 1981, Ser. No. 234,097
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1980, 3021057
Int. Cl.³ B65D *83/00*; F37L *37/18*
U.S. Cl. 222—89 5 Claims



1. A beer container device for use with a tap fitting having opposingly projecting fastening stirrups and a descending pipe, said device comprising:

(a) a container of plastic material having a narrow neck at the top thereof,

(b) a cover mounted in gas-tight relationship on said neck,

(c) a rubber stopper being positioned in said cover and extending into said neck, said stopper being adapted to be pierced by said descending pipe,

(d) said cover having a pair of opposingly projecting arms for receiving said opposingly projecting fastening stirrups of said tap fitting.

4,380,307

DISPENSING DEVICES

Scott H. Stillinger, Los Gatos, Calif., assignor to Dart Industries Inc., Northbrook, Ill.

Continuation of Ser. No. 964,715, Nov. 29, 1978, abandoned.
This application Aug. 4, 1980, Ser. No. 175,216
Int. Cl.³ B65D *83/06*
U.S. Cl. 222—142.9 19 Claims

1. A closure device for a container provided with at least three compartments open at the top of the container and angularly offset from one another around the container axis, said device comprising:

cover means mounted on top of said container, and rotatable about its axis, said cover means overlying all of said compartments and presenting first and second dispensing openings having respectively different configurations and spaced apart from one another about the container axis, said cover means presenting a compartment sealing region between said openings;

cap means covering the top of said container, enclosing said cover means and provided with an outlet opening, said cap means being mounted for rotation about the axis of said container to bring said outlet opening into alignment with any selected one of said compartments; and

linkage means connected between said cover means and said cap means for permitting said cap means to rotate relative to said cover means through an angular path over which said cap means outlet opening moves between said first and second dispensing openings of said cover means and for causing said cap means and cover means to rotate as a unit when said cap means outlet opening is aligned with one of said dispensing openings and said cap means is rotating in the direction away from the other said dispensing opening with respect to the angular path.

4,380,308

SELF-CLEANING ADHESIVE DISPENSING APPARATUS

David L. Greenwood, 3118 Sandy La., Glenview, Ill. 60025

Filed Dec. 23, 1980, Ser. No. 220,247
Int. Cl.³ B67D *1/08*
U.S. Cl. 222—148 5 Claims

1. A self-cleaning apparatus for dispensing adhesive materials from a sealed container of adhesive through a flexible conduit, and for purging said conduit of adhesive material when said container is replaced or refilled, comprising:

means for providing compressed air under pressure,

first and second air lines each having one end secured to said compressed air means,

pressure regulator means communicating with the opposite end of said first air line,

a normally closed solenoid valve means communicating with the opposite end of said second air line,

said container having a lid defining first and second openings,

dip tube means extending downwardly from said second opening,

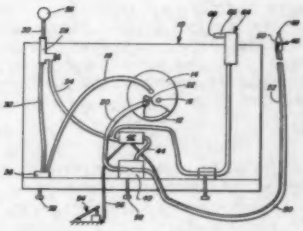
a third air line having one end in communication with said pressure regulator means and an opposite end secured to said first opening in said lid for providing pressurized air to said container,

said flexible conduit having one end secured to said second opening for receiving adhesive from said container,

means for dispensing said adhesive, said dispensing means having an open end,

said flexible conduit having an opposite end secured to said adhesive dispensing means,

first valve means for opening and closing said flexible conduit,



a fourth air line extending between and communicating with said solenoid valve means and said first valve means,

means for actuating said solenoid valve means for providing pressurized air to travel through said solenoid and said fourth air line to said first valve means,

a fifth air line having one end communicating with said second air line between said compressed air means and said solenoid valve means,

nozzle means secured to the opposite end of said fifth air line, said nozzle means being adapted to provide an air tight connection with said open end of said dispensing means,

second valve means for opening and closing said fifth air line,

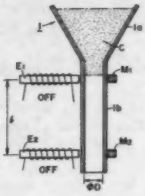
whereby said dispensing means, said flexible conduit and said dip tube means may be purged of said adhesive when desired by connecting said open end of said dispensing means to said nozzle means, closing said pressure regulator means, and opening said first and second valve means, whereupon said compressed air travels from said means for providing compressed air, through said second air line, said fifth air line, said nozzle means, said dispensing means, said flexible conduit, said dip tube means, and into said container, thereby flushing said adhesive into said container from said dispensing means, said flexible conduit and said dip tube means.

4,380,309

DEVELOPER SUPPLY DEVICE

Yuji Takahashi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 15, 1981, Ser. No. 225,342
Claims priority, application Japan, Jan. 21, 1980, 55-5424
Int. Cl.³ G01F 11/28
U.S. Cl. 222—450 15 Claims



1. A developer supply device for supplying a developing device with developer consisting of a mixture of toner and carrier, said developer supply device having:

toner supply means for supplying toner;

carrier supply means having a supply port for supplying carrier;

magnetic field forming means provided near the carrier supply port of said carrier supply means and including an electromagnet and a permanent magnet disposed in opposed relation therewith; and

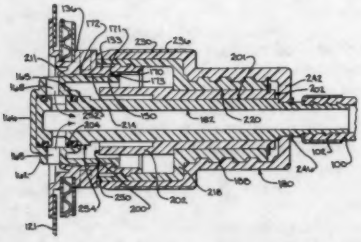
means for controlling the intensity of a magnetic field imparted to the supply port of said carrier supply means by said magnetic field forming means, the intensity of the magnetic field being varied by said control means so that the passage of the carrier through said carrier supply port and prevention of said passage are selectively effected.

4,380,310

FLEXIBLE CONTAINER WITH DISPLACEABLE FITTING AND PROBE COUPLER APPARATUS

John W. Schneiter, Arlington Heights; Ronald J. Reiss, Hoffman Estates, and Albert G. Enskat, Barrington, all of Ill., assignors to Container Technologies, Inc., Barrington, Ill.

Continuation-in-part of Ser. No. 285,937, Jul. 23, 1981, which is a continuation of Ser. No. 142,154, Apr. 21, 1980, abandoned. This application Jan. 6, 1982, Ser. No. 337,392
Int. Cl.³ B65D 25/44
U.S. Cl. 222—501 15 Claims



1. The combination of a closure fitment, a seal plug, and a probe connector for use with a disposable container;

said closure fitment comprising a hollow body having a portion attachable to a wall of the container and having a passageway providing communication between the exterior and the interior of the container;

said seal plug preventing external contaminants from entering the container and controlling flow of fluid from the container through a first aperture means, said seal plug comprising a body which is movable within said fitment between positions to open and close said first aperture means;

said probe connector providing means for connecting said closure fitment to a delivery tube for conveying fluid from said container to a point of use; said probe connector comprising probe means, probe adapter means, and a second aperture means; said probe adapter means being detachably connectible to said closure fitment to place said second aperture means in communication with said first aperture means; said probe means having a tubular body slidably journaled in said adapter means for axial movement between positions to open and close said second aperture means;

a manually rotatable probe actuating member connected to said probe means and threadedly engaged with said adapter means to move said probe means in an axial direction in response to rotation of said probe actuating member relative to said adapter means;

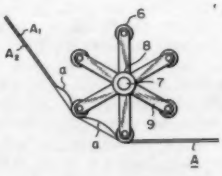
whereby forward flow of fluid is enabled from the container to the point of use by opening the first and second aperture means when the probe connector is connected to the closure fitment; and whereby further, back flow of fluid from the delivery tube is prevented by closing the second aperture means when the probe connector is disconnected from the closure fitment.

4,380,311

DEVICE FOR GUIDING A KNITTED OR WOVEN FABRIC

Soichi Torii, Kyoto, Japan, assignor to Torri Winding Machine Co., Ltd., Kyoto, Japan

PCT No. PCT/JP79/00190, § 371 Date Jul. 29, 1980, § 102(e) Date Jul. 23, 1980, PCT Pub. No. WO80/01158, PCT Pub. Date Jun. 12, 1980
PCT Filed Jul. 19, 1979, Ser. No. 204,375
Claims priority, application Japan, Nov. 29, 1978, 53-165440
Int. Cl.³ B65H 17/20
U.S. Cl. 226—190 9 Claims



1. A device for guiding a knitted or woven fabric flattened or folded into a half width, to form a fabric having an inside half and an outside half, conveyed by means of a taking-up mechanism which comprises: a plurality of fabric guiding surfaces extending parallel to and arranged equidistant radially around an axis, said axis being perpendicular to the conveying direction of the fabric and parallel to the surface of the flattened or folded fabric, said fabric guiding surfaces being rotatable about said axis, for transverse contact with the inside half of the guided fabric on which inside half is superposed the outside half, and a plurality of spaces for receiving a longitudinal part of the inside half of the fabric, said spaces being formed between adjacent fabric guiding surfaces.

4,380,312

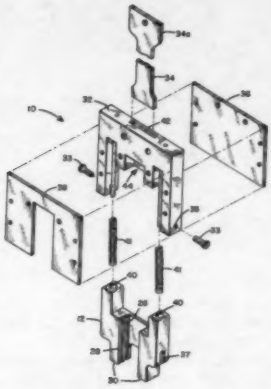
STAPLING TOOL

Edward L. Landrus, Coon Rapids, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 17, 1980, Ser. No. 169,796

Int. Cl.³ B25C *1/04, 1/06, 3/00*

U.S. Cl. 227—116 **19 Claims**



1. A tool for applying fasteners to fasten an article to a workpiece, comprising:

a fixed guide for holding a plurality of said fasteners therein, one of said plurality of fasteners being held in a drive position;

a compressible foot operatively coupled to said fixed guide defining a drive groove, said compressible foot adapted to contact said workpiece and be compressed into said fixed guide, said drive groove engaging the fastener located in said drive position and providing support for said fastener during a driving operation;

said compressible foot and said fixed guide cooperating with each other and with said article and said workpiece to allow said compressible foot to be compressed into said fixed guide a distance dependent upon the thickness of said article;

a plunger operatively coupled to said fixed guide for driving the fastener located in said driving position from said fixed guide through said drive groove of said compressible foot and into said workpiece; and

a drive limiting means coupled to said plunger for preventing said plunger from driving beyond a fixed predetermined position relative to said fixed guide;

whereby said fastener located in said drive position may be driven into said workpiece a distance relative to said fixed guide and into said workpiece a distance dependent upon said thickness of said article.

4,380,313

AIR-POWERED DRIVING TOOL, HAVING A PILOT PISTON AND CYLINDER

Arthur Klaus, Frankfurt am Main, and Horst Tacke, Bad Vilbel, both of Fed. Rep. of Germany, assignors to Signode Corporation, Glenview, Ill.

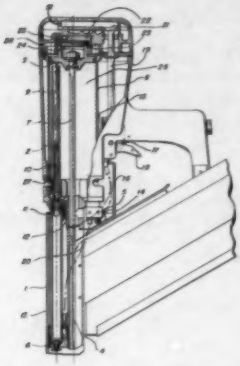
Filed Nov. 13, 1980, Ser. No. 206,388

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1979, 2946387

Int. Cl.³ B25C *1/04*

U.S. Cl. 227—130 **7 Claims**

1. An air-powered driving tool, specially for long fixing parts, such as fasteners, comprising a housing including a driving barrel and defining a chamber containing air under pressure, a first cylinder in said housing, a working piston disposed within said first cylinder, a driver blade joined to said working piston and guided in said driving barrel, first valve means for controlling the flow of air under pressure to said cylinder to move said working piston from a driving to a driven position, valve regulated means for returning the working piston from the driven position to the driving position, said valve regulated means comprising a pilot cylinder, a piston operated assembly including a pilot piston disposed in said pilot cylinder and



constructed and arranged to control movement of movable means to contact said working piston to return it to the driving position and second valve means for regulating the flow of high pressure air to and from said pilot cylinder, whereby the movable means will be out of contact with said driving piston during its driving action and will be moved into contact with the driving piston after it has been driven to return it to the driving position.

4,380,314

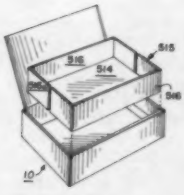
BOX TYPE CARTON WITH HINGED LID AND ONE PIECE REINFORCED INSERT

Joseph Langston, Jr., Jacksonville, Fla., and Robert J. Murray, Norcross, Ga., assignors to Federal Paper Board Co., Inc., Montvale, N.J.

Continuation-in-part of Ser. No. 270,594, Jun. 4, 1981. This application Jul. 23, 1982, Ser. No. 401,242

Int. Cl.³ B65D *5/64, 5/56*

U.S. Cl. 229—33 **5 Claims**



1. A box in the form of a tray with a hinged lid which is adapted for the packaging of cigars or similar articles, said box being formed from a single cut and scored blank of relatively lightweight paperboard, said box having a body portion comprising a rectangular bottom wall, front and back sidewalls and end walls which are upstanding from the peripheral edges of the bottom wall, and a planar lid hinged along one edge thereof to the top edge of the back wall, the front, back and end walls having outer and inner panels, the inner panels on the front and end walls each being folded downwardly from a top edge of the wall which top edge has substantial width and said inner panels being secured on the inside of said upstanding walls, the

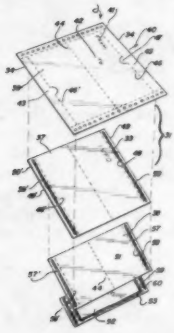
front and back wall forming outer panels having hinged corner connecting panels secured between the inner and outer panels of the end walls, and a reinforcing panel insert formed from a single cut and scored paperboard blank of substantial thickness secured between the inner and outer panels of said front and end walls, said reinforcing panel comprising a rectangular bottom reinforcing wall, front and back reinforcing sidewalls and reinforcing end walls which are supported from said rectangular bottom reinforcing wall, said hinged lid comprises an outer and inner panel of substantially the same size, and reinforcing panels hinged to the opposite end edges of one of said outer and inner panels and adhesively secured between said outer and inner panels so as to form a substantially rigid reinforced, planar lid structure.

4,380,315

MAILER

Donald J. Steidinger, Barrington, Ill., assignor to Wallace Computer Services, Inc., Hillside, Ill.

Filed Jan. 14, 1981, Ser. No. 224,926
Int. Cl.³ B65D *27/10*
U.S. Cl. 229—69 **22 Claims**



10. A connected series of multi-ply mailer units separable into individual units each capable of being transversely folded into a size approximating a No. 10 envelope so as to avoid postal damage, each unit including an envelope-forming ply having a control margin along at least one longitudinal side edge and an information ply approximately as long as said envelope-forming ply and connected thereto along the top edge to prevent interference during computer printout, and tear-off means along one edge for removal of the folded information ply from the folded, sealed envelope forming ply, each unit being equipped with at least one line of potential folding extending transversely of said control margin to permit said unit to be folded into at least two parts with said information ply being present in both of said two parts whereby a large message-bearing ply is provided in an envelope which is approximately one-half the size of said message-bearing ply when said unit is folded into two parts.

4,380,316

ELECTRONIC INTERLOCK FOR A CASH COLLECTION RECEPTACLE

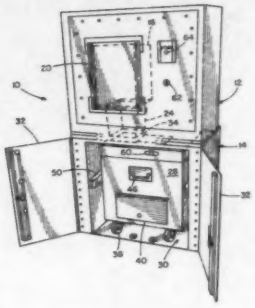
John S. Glinka, Elk Grove Village, and Larry E. Zack, Cary, both of Ill., assignors to Qonaar Corporation, Elk Grove Village, Ill.

Filed Jul. 14, 1981, Ser. No. 283,228
Int. Cl.³ G05F *9/06*
U.S. Cl. 232—16 **17 Claims**

15. In a collection receptacle for receiving cash, said receptacle of the type including a compartment for receiving a removable cash box having a door for restricting access to cash contained therein, the improvement in an electronic interlock comprising:

(a) means for generating a coded electronic signal having a predetermined code;

(b) means physically separate from said generating means for decodng said coded electronic signal, said decoding



means responsive only to said coded electronic signal having said predetermined code;

(c) separable means for coupling said signal from the generating means to the decoding means; and

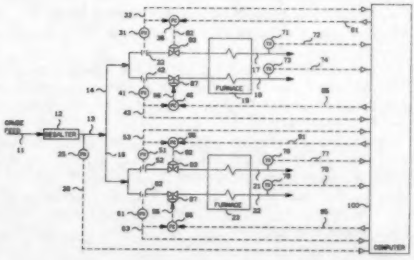
(d) means, responsive to said decoding means detecting said coded electronic signal having said predetermined code, for opening said door.

4,380,317

FURNACE CONTROL

Lawrence A. Ryan, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 29, 1982, Ser. No. 344,145
Int. Cl.³ F23N *1/00*; G06F *15/46*
U.S. Cl. 236—15 BF **40 Claims**



1. Apparatus comprising:

a furnace having at least first and second coils;

means for spliting a first fluid stream into at least second and third fluid streams, for passing said second fluid stream through said first coil of said furnace and for passing said third fluid stream through said second coil of said furnace;

means for establishing a first signal representative of the actual pressure of said first fluid stream;

means for establishing a second signal representative of the desired pressure of said first fluid stream;

means for comparing said first signal and said second signal and for establishing a third signal which is responsive to the difference between said first signal and said second signal, wherein said third signal is scaled so as to be representative of any change in the flow rate of said second and third fluid streams required to maintain said first signal substantially equal to said second signal;

means for establishing a fourth signal representative of the actual temperature of said second fluid stream after said second fluid stream has passed through said furnace;

means for establishing a fifth signal representative of the desired temperature of both said second fluid stream after said second fluid stream has passed through said furnace and said third fluid stream after said third fluid stream has passed through said furnace;

means for comparing said fourth signal and said fifth signal and for establishing a sixth signal which is responsive to the difference between said fourth signal and said fifth signal, wherein said sixth signal is scaled so as to be representative of the flow rate of said second fluid stream required to maintain said fourth signal substantially equal to said fifth signal;

means for combining said third signal and said sixth signal to establish a seventh signal;

means for manipulating the flow rate of said second fluid stream in response to said seventh signal;

means for establishing an eighth signal representative of the actual temperature of said third fluid stream after said third fluid stream has passed through said furnace;

means for comparing said eighth signal and said fifth signal and for establishing a ninth signal which is responsive to the difference between said eighth signal and said fifth signal, wherein said ninth signal is scaled so as to be representative of the flow rate of said third fluid stream required to maintain said eighth signal substantially equal to said fifth signal;

means for combining said third signal and said ninth signal to establish a tenth signal; and

means for manipulating the flow rate of said third fluid stream in response to said tenth signal.

4,380,318

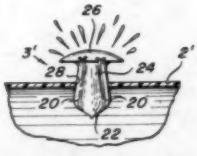
VARIABLE PRESSURE, CONSTANT FLOW DRIP EMITTER SYSTEM AND HEAD

Byron V. Curry, 1150 Oriole Rd., Santa Barbara, Calif. 93108

Filed Jul. 9, 1980, Ser. No. 167,035

Int. Cl.³ B05B 1/30

U.S. Cl. 239—533.13 **11 Claims**



1. A drip emitter system including a line through which water may pass, the line having at least one opening, and; a drip emitter head received in the opening in the line, the head including a bulbous end received within, and larger than, the opening in the line, a flared top external of the line, and a shank portion connecting the end and the top, at least a portion of the shank tapering inwardly from the bulbous end gradually towards the top, whereby an increase in water pressure within the line forces the head more firmly into the opening, and the tapering shank gradually moves upwardly in the line to effect a throttling action to constrict the water flow past the bulbous head in proportion to the increase in water pressure to proportionally offset any increase in water flow that would be caused by such pressure increase.

4,380,319

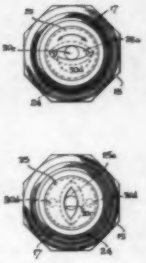
LIQUID SPRAY NOZZLE

Leo J. Shigut, Torrance, Calif., assignor to Edward A. Sokolski, Torrance, Calif., a part interest

Continuation-in-part of Ser. No. 801,390, Jun. 16, 1978, abandoned, and Ser. No. 172,288, Jul. 25, 1980, abandoned, which is a continuation-in-part of Ser. No. 801,390,. This application Mar. 12, 1982, Ser. No. 357,786

Int. Cl.³ B05B 1/32

U.S. Cl. 239—540 **8 Claims**



1. A nozzle for dispensing liquid comprising

tubular channel means for receiving a liquid stream at one end thereof and outletting said liquid stream at the other end thereof,

a first inner orificed member having a wall portion which forms a wall for said other end of the tubular channel means, said wall portion having a larger centrally located circular orifice and a pair of smaller circular orifices formed therein, said smaller orifices being symmetrically arranged on opposite sides of the larger orifice, the center of all of said orifices being along a common transverse axis,

a second outer orificed plate member having a generally biconvex shaped orifice formed substantially in the center thereof, said biconvex shaped orifice having major and minor axes, the minor axis of said biconvex shaped orifice being equal in length to the diameter of said centrally located circular orifice, the major axis of said biconvex shaped orifice being equal in length to the distance between the centers of said smaller orifices, and

means for supporting said second outer orificed member with the biconvex shaped orifice thereof axially aligned with the centrally located orifice of said first inner orificed member,

said supporting means for said second outer orifice member being attached to said tubular channel means for rotatable movement between the supporting and tubular channel means,

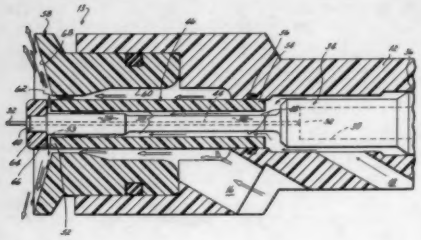
a flat fan-shaped liquid spray being produced when said inner and outer orificed members are relatively positioned in a first position whereat the corners of the elliptically shaped orifice are opposite the smaller orifices, and a narrow cylindrical liquid stream being produced when the inner and outer orificed members are relatively positioned in a second position whereat a non-orificed portion of said outer orificed member is positioned opposite the smaller orifices of the inner orificed member.

4,380,320

ELECTROSTATIC POWDER SPRAY GUN NOZZLE

Thomas E. Hollstein, Amherst, and Ronald J. Hartle, Lorain, both of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Filed Feb. 25, 1981, Ser. No. 238,115
Int. Cl.³ B05B 5/04
U.S. Cl. 239—697 6 Claims



1. Apparatus for the coating of an object with a powder spray comprising:

a gas conduit adapted to be connected to a source of pressurized gas to provide a central stream of pressurized gas emitted from said gas conduit,

a nozzle surrounding said gas conduit and defining therewith a powder coating material passageway encircling said central stream of pressurized gas, said nozzle being adapted to communicate with a source of fluidized powder coating material under pressure for emitting powder coating material therefrom through said passageway, and

deflecting means mounted centrally of said nozzle for deflecting said central stream of pressurized gas to form an outwardly moving stream of pressurized gas, the outer dimension of said deflecting means being no greater than the inner dimension of said coating material passageway where said powder coating material is emitted from said nozzle and said deflecting means being so located with respect to said nozzle that said outwardly moving stream of pressurized gas impacts said powder coating material within the confines of said nozzle to produce a conical spray pattern of said powder coating material issuing from said nozzle.

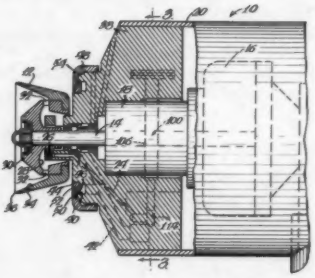
4,380,321

COLOR CHANGE VALVE STRUCTURE FOR ROTARY HEAD ELECTROSTATIC SPRAY COATING SYSTEMS

Samuel W. Culbertson, Arvada; Charles W. McCulloch, Westminster, and Keith G. Williams, Boulder, all of Colo., assignors to Binks Manufacturing Company, Franklin Park, Ill.

Filed Jan. 26, 1981, Ser. No. 228,365
Int. Cl.³ B05B 5/00
U.S. Cl. 239—700 3 Claims

1. In combination, rotary head electrostatic spray coating apparatus comprising a generally cylindrical body, a rotary spray head at a forward end of said body, means for imparting a rapid rotation to said spray head, nozzle means for directing a jet of coating material against said head for discharge from a peripheral edge thereof in a spray, an inlet to said body for connection through a line with either a supply of coating material of a selected color or a supply of flush for the coating material, an outlet from said body, a passage in said body between said inlet, said outlet and said nozzle means, and a color change valve structure comprising valve means contained entirely in said body and in said passage substantially immediately behind said spray head for controlling paths through said passage and for connecting and disconnecting said inlet with and from said outlet and said nozzle means, and means for operating said valve means to establish a path through said passage between said inlet and said nozzle means and to interrupt a path through said passage between said inlet and said outlet when said inlet is connected through the line with a supply of coating material of one color, so that coating material of the one color flows through the line and said passage to said nozzle means for being directed against said spray head, and to interrupt the path through said passage between said inlet and said nozzle means and to establish a path through said passage between said inlet with said outlet when said inlet is connected through the line with the supply of flush, so that flush flows through the line and from said inlet to said outlet through said passage to cleanse the same in preparation for connecting said inlet with a supply of coating material of another color, wherein said passage has a first enlarged chamber separating said passage into a first passage section between said inlet and said first chamber and a second passage section between said first chamber and said nozzle means, said second passage section forming a first valve seat whereat it communicates with said nozzle means, and a second enlarged chamber separating said passage into a third passage section between said first and second chambers and a fourth passage section between said second chamber and said outlet, said fourth passage section forming a second valve seat whereat it communicates with said outlet, said valve means comprising a material valve for controlling a path through said passage between said inlet and said nozzle means and a dump valve for controlling a path through said passage between said inlet and said outlet, said material valve including an elongate rod extending

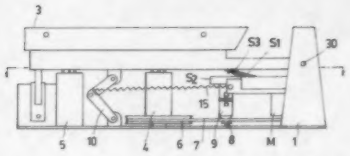


through said first chamber and reciprocable therein, one end of said rod forming a valve for movement against and away from said first valve seat upon reciprocation of said rod, said dump valve including an elongate rod extending through said second chamber and reciprocable therein, one end of said rod forming a valve for movement against and away from said second valve seat upon reciprocation of said rod, said valve operating means, when said inlet is connected with a supply of coating material through the line, operating said material and dump valves to move said material valve rod away from said first valve seat and to move said dump valve rod against said second valve seat, whereby coating material flows through the line to said inlet and from said inlet through said first passage section, said first chamber and said second passage section to said nozzle means for being directed against said spray head, but does not flow through said third passage section, said second chamber and said fourth passage section to said outlet, and so that when said inlet is connected through the line with the supply of flush said valve operating means operates said material and dump valves to move said material valve rod against said first valve seat and said dump valve rod away from said second valve seat, whereby flush flows through the line to said inlet and from said inlet through said first passage section, said first chamber, said third passage section, said second chamber and said fourth passage section to said outlet to cleanse the same of coating material, but does not flow through said second passage section to said nozzle means.

4,380,322
TAPE REWINDING APPARATUS FOR VIDEO CASSETTE

Chun T. Yeh, No. 6, Lane 308, Bao San Rd., Hsin Chu, Taiwan

Filed Nov. 19, 1980, Ser. No. 208,190
Int. Cl.³ G03B *1/04;* G11B *15/32*
U.S. Cl. 242—198 2 Claims



2. A tape rewinding apparatus for a video cassette having a cassette compartment lid, the apparatus comprising a tape-end detecting member which sends an electric signal as the end of a tape appears, and means for ejecting the cassette on receipt of the electric signal; characterized in that

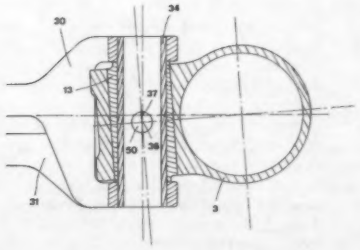
said ejecting means comprises a catch for locking the cassette compartment lid at closed position, and a solenoid for releasing said catch to open the lid upon receipt of said electric signal; and wherein

said tape end detecting member is a centrifuge-type actuator, said apparatus further comprising a motor driving a winding spindle by means of a transmission belt, said actuator being rotatably driven, and, said apparatus further comprising a switch in circuit with said solenoid; and said centrifuge-type actuator is driven to rotate by the transmission belt, whereby the centrifuge-type actuator can activate or inactivate said switch through the the centrifugal force acting on said actuator.

4,380,323
MAIN UNDERCARRIAGE TRAIN FOR AN AIRCRAFT

Jean Masclet, Paris, and Andre Turiot, Morsang sur Orge, both of France, assignors to Messier-Hispano-Bugatti, Montrouge, France

Continuation of Ser. No. 969,173, Dec. 13, 1978, abandoned.
This application Nov. 10, 1980, Ser. No. 205,174
Claims priority, application France, Feb. 2, 1978, 78 00016
Int. Cl.³ B64C *25/00, 25/10*
U.S. Cl. 244—102 R 15 Claims



1. A main undercarriage train for an aircraft, comprising two undercarriages composed of a left-hand and a right-hand undercarriage each of which are retractable substantially from an "undercarriage down" to an "undercarriage up" position laterally and which are disposed symmetrically on respective sides of said aircraft, said left-hand and said right-hand undercarriages being interchangeable and designated in accordance with its position relative to a longitudinal plane of symmetry of the aircraft, each said undercarriage comprising:

a leg which supports a wheel carrying member carrying at least one wheel, a pivot mounting each of said undercarriage legs on the aircraft, each of said legs being symmetrically inclined along a pivot axis passing through said pivot mounting with respect to said longitudinal plane, and each said wheel carrying member having a wheel support internal bore;

damping means and alignment means associated with each said wheel carrying member for keeping the plane of said at least one wheel parallel to the longitudinal plane of symmetry of the aircraft in the "undercarriage down" position with said leg, said damping means and said wheel-carrying member on each of said undercarriages being identical with each other;

each said undercarriage leg having a plane of symmetry which passes through the pivot axis of said pivot mounting on the aircraft;

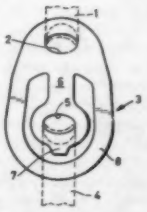
each said undercarriage including a bush having an external cylindrical surface portion for retaining said bush in either of two determined positions in said wheel support bore in said wheel-carrying member, said bush having an internal bush bore with the axis of said internal bush bore being perpendicular to said plane of symmetry of said undercarriage leg; and,

a shaft passing through said internal bush bore, said alignment means being pivoted on said shaft, the axis of said internal bush bore being off-set with respect to the axis of said wheel support bore in which said bush is retained, thereby to compensate from the angular displacement between the longitudinal plane of symmetry of the aircraft and the inclined pivot mounting axis of said undercarriage leg, one of said two determined positions in which said bush is retained in said wheel support bore being displaced through a certain angle from the other of said two determined positions and the other of said two determined positions being obtained from the one of the positions by rotating said bush through said certain angle about the axis of said internal bush bore, whereby to provide for the interchangeability of said left-hand and right-hand undercarriages.

4,380,324
SUPPORT MEMBER FOR AN EXHAUST PIPE OF A MOTOR VEHICLE

Ehrenfried Woesler, Rosrath, Fed. Rep. of Germany, assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 22, 1981, Ser. No. 304,472
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1980, 3034370
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—610 5 Claims



1. A suspension device for an exhaust pipe of a motor vehicle comprising a one-piece flexible mounting support member having a loop type body portion with a central opening,

an elastic tether portion depending in a cantilever manner from the body portion into the central opening for a swinging movement with respect to the body portion,

the body portion having a hole therein at one end adapted to receive a vehicle support member therethrough, and

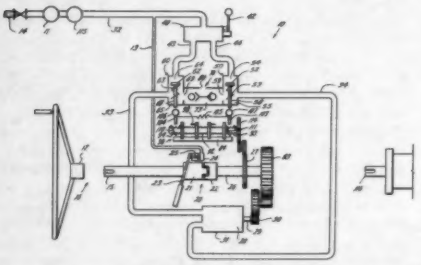
the tether portion having a hole therein adapted to receive therethrough a portion of the exhaust pipe to provide an elastically soft suspension of the exhaust pipe from the vehicle, the tether portion being freely swingible through the central opening in either direction, and including a protuberance extending from one end a distance sufficient to overlap the body portion during swinging movement of the tether portion in one direction to thereby engage the tether portion against the body portion to resist further swinging movement of the tether portion in the one direction.

4,380,325

GAS OPERATED VALVE ACTUATOR

Thomas W. Palmer, 2907 Del Monte Crt., Missouri City, Fort Bend County, Tex. 77459

Filed Dec. 30, 1980, Ser. No. 221,461
Int. Cl.³ F16K *31/14, 31/50, 31/52*
U.S. Cl. 251—14 5 Claims



1. A gas-operated valve actuator for rotating the input shaft of a valve, the actuator comprising:

a body,

selector valve means mounted to the body for selecting and permitting gas flow through either a forward motor line connected between a gas source and a motor means or a reverse motor line connected between the gas source and the motor means,

limit valve means mounted to the body in communication with each motor line for controlling the flow of gas in the respective line,

motor means mounted to the body and operable by the gas from the gas source flowing through the selected motor-line, the motor means connected to the input shaft for rotating it, and

quick shutoff means for the limit valve means, the quick shutoff means mounted to the body and comprising:

cam screw means mounted to the body in movable coaction with the input shaft via intermediate gears there between, said cam screw means having a fine pitched threaded portion and a course pitched threaded portion and a neutral area disposed between the threaded portions,

major cam means movably mounted on the cam screw means, the major cam means provided with threads for coacting with the threaded portions of the cam screw means,

tripping cam means movably mounted on the cam screw means, the tripping cam means provided with threads for coacting with the threaded portions of the cam screw means and disposed so that the major cam means moving on the fine pitched threaded portion moves to contact and urge the tripping cam means onto the course pitched threaded portion toward limit valve support means,

limit valve support means pivotally connected to the body and supporting the limit valve means in open position, said limit valve support means disposed so that upon contact by the tripping cam means, the limit valve support means pivots thereby shutting off the limit valve means,

control means for alternately shutting off the flow in the selected motor line when the input shaft reaches its travel limit.

4,380,326

BELT TIGHTENING TOOL

Ermanno A. Marzorati, 845 Rim Crest Cir., and Murrel A. Mathis, 849 Rim Crest Cir., both of Westlake Village, Calif. 91361

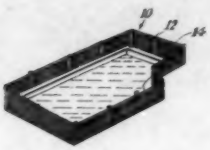
Continuation-in-part of Ser. No. 161,749, Jun. 23, 1980, abandoned. This application Sep. 14, 1981, Ser. No. 301,937
Int. Cl.³ B66F *3/00*
U.S. Cl. 254—131 4 Claims

1. In combination with an engine, a power generating apparatus mounted on said engine by a pivot bracket assembly, said power generating apparatus being spaced from said engine and being pivotable in respect thereto, a belt connecting said engine and said power generating apparatus, a tool to facilitate tightening of said belt, said tool comprising:

an elongated member terminating in a fore end and an aft end, said elongated member having a main body section located substantially in a first plane, a cross plate forming a second plane, said cross plate being secured to said elongated member, said fore end terminating in a hook, said hook being located within said first plane, a cut-out section formed within said said fore end adjacent said hook, said cut-out section terminating in an inner edge and an outer edge, said cross plate forming said inner edge of said cut-out section with said hook forming said outer edge, the ends of said cross plate forming first and second fulcrum points, whereby said hook is to engage with said power generating apparatus and one of said fulcrum points is to be placed against the exterior of said power generating apparatus and by exerting force against said main body section the said power generating apparatus is caused to pivot about said pivot bracket assembly thereby tightening said belt; and

said second plane being inclined in respect to said first plane so that the spacing between said first fulcrum point and said hook being less than the spacing between said second fulcrum point and said hook.

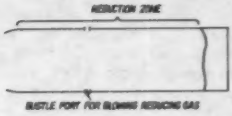
4,380,327
SAFETY BARRIER
Robert E. Fish, 454 S. Dixie Hwy., Pompano Beach, Fla. 33060
Filed May 11, 1981, Ser. No. 262,777
Int. Cl.³ E04N 17/16
U.S. Cl. 256—24 4 Claims

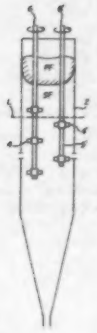


1. A lightweight, waterproof safety barrier comprising:
a plurality of spaced apart, rigid vertical support members;
at least one mesh, flexible, waterproof restraining panel;
means for connecting said panel to each of said vertical support members; and
a flexible line connected to the top of said panel;
each said vertical support means includes an aluminum mounting bracket and at least one stainless steel screw mounted to a respective said vertical support member, holding said restraining panel therebetween;
each said vertical support member being constructed of aluminum.

4,380,328
SHAFT FURNACE FOR REDUCING ORES
Hiroyuki Kohama, Daito; Masaru Tamiya, Kobe; Sunichi Mizukami, Kobe; Dentaro Kaneko, Kobe, and Yoshio Kimura, Akashi, all of Japan, assignors to Kobe Steel, Ltd., Kobe, Japan
Filed Jan. 29, 1980, Ser. No. 116,458
Claims priority, application Japan, Jan. 29, 1979, 54-9596; Feb. 23, 1979, 54-21712
Int. Cl.³ F27B 9/20
U.S. Cl. 266—177 1 Claim

1. A shaft furnace for reducing ores with a gas comprising:
a reduction zone formed along a predetermined height of said furnace;
a plug flow zone formed in an upper portion of said reduction zone of said furnace during reduction operation;
a shear flow zone formed in a portion of said reduction zone of said furnace downstream of said plug flow zone; and
means operatively connected to said furnace in said reduction zone for shifting said shear flow zone to a position upstream of a portion of said reduction zone where a reduction ratio of 50 to 70% occurs, wherein said means for shifting comprises a hydraulic radius in the reduction zone where a reduction ratio greater than 50% occurs, defined by the formula:

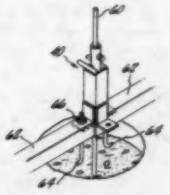




$$R \leq 120 \exp.(8.6\text{-}0.009T),$$

wherein R is the hydraulic radius and T is the temperature (°C.) of the reducing gas.

4,380,329
FOOTING JIG FOR POSITIONING FASTENERS
Louis E. M. Nunne, P.O. Box 1785, Paso Robles, Calif. 93446
Filed Aug. 25, 1980, Ser. No. 180,628
Int. Cl.³ B25B 1/20
U.S. Cl. 269—41 6 Claims



1. A system for the placement of the footing fasteners within a given footing of a structure in the proper location with respect ot the footing fasteners in adjacent footings of said structure wherein said structure includes a support element extending between the footing fasteners of adjacent footings, comprising:
a first device for positioning footing fasteners, with said device including a body having an elongated opening therethrough for receiving a reference member, said body including locking means for locking said device to said reference member at a predetermined position, and a plurality of support members fixed to said body, each said support member having an opening for receiving and

thereby positioning a respective fastener, wherein the support members are designed to receive a first end of a support element of the structure, and

a second device for positioning footing fasteners, with said device including a body having an elongated opening therethrough for receiving a reference member, said body including locking means for locking said device to said reference member at a predetermind position, and a plurality of support members fixed to said central member, each said support member having an opening for receiving and thereby positioning a respective fastener, wherein the support members are designed to receive the second end of a support element of the structure, thereby aligning said footing fasteners with respect to the support element and the adjacent footing.

4,380,330

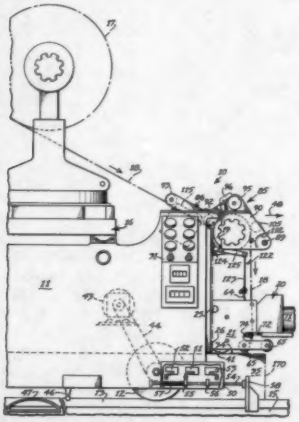
CATCHERLESS CLOTH SPREADING MACHINE

Hoyt L. Smith, Nashville, Tenn.; Cecil S. Frederick, deceased, late of Murfreesboro, Tenn., by Wallace Frederick, administrator, Readyville, Tenn., assignors to Cutters Exchange, Inc., Nashville, Tenn.

Continuation-in-part of Ser. No. 45,181, Jun. 4, 1979, abandoned. This application Sep. 22, 1980, Ser. No. 189,594

Int. Cl.³ B65H *29/46*

U.S. Cl. 270—31 **5 Claims**



4. In a cloth spreading machine having cloth supply means and a spreader frame including a vertically movable spreader element, said spreader frame having longitudinal and transverse dimensions and being movable longitudinally forwardly and rearwardly over a cloth supporting surface for carrying a cloth from the cloth supply means to said spreader element for spreading the cloth longitudinally in layers upon the supporting surface, a wind break device comprising:

(a) a wind curtain of flexible sheet material having an upper end portion, and a lower end portion,

(b) a curtain roller attached to said upper end portion for winding and unwinding said curtain,

(c) means mounting said curtain roller for rotary movement transversely on said spreader frame above said spreader element,

(d) means biasing the rotary movement of said curtain roller to wind said curtain about said curtain roller, and

(e) means attaching the lower end portion of said curtain to said spreader element for vertical movement therewith.

4,380,331

SHEET FEEDING AND ALIGNING APPARATUS FOR ROTARY PRINTING MACHINE

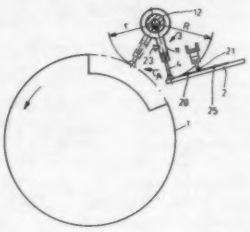
Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Feb. 3, 1981, Ser. No. 231,160

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1980, 3004314

Int. Cl.³ B65H *5/08*

U.S. Cl. 271—11 **10 Claims**



1. Sheet feeding and aligning apparatus to pick up a sheet (20) of a printing substrate, particularly paper, for transfer to a moving sheet transport mechanism and having

a make-ready table (20);

a vacuum suction pick-up and sheet transport element (3) including

a tubular housing (11);

a suction tube (4) movably guided in said housing for telescopic movement with respect thereto;

bias means (16) for biassing the suction tube (4) towards a sheet (20) to be gripped;

and pull-in means (6) for pulling the suction tube inwardly within the tubular housing upon adhesion of a sheet thereto under vacuum applied to the interior of said tubular housing (11), so that the pick-up element (3) will be of variable length,

the pick-up element being positioned for engagement with the leading edge of the sheet (20) located on the make-ready table in aligned position and supported for pivoting movement for transporting a sheet after being picked up; and comprising

a locking element (23) selectively positionable in said housing (11) to contain telescoping pull-in motion of the suction tube within the tubular housing to a limited distance, and permit, after repositioning, continued telescoping movement of the suction tube within the tubular housing; and

means for controlling the pick-up motion of the pick-up element (3) in steps

(a) for pick-up of the leading edge of the sheet and lifting the sheet off the make-ready table (2) by the limited distance (R-1 mm) defined by the locking means by foreshortening said length by pulling in said suction tube for said limited distance; and then

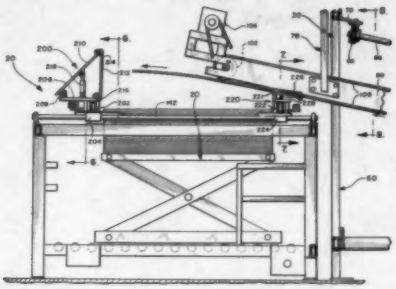
(b) for lifting the leading edge of the sheet for the remaining distance (R–r) and further foreshortening the pick-up element by further pulling in said suction tube upon repositioning of said locking means and pivotally moving said pick-up element to a position required for engagement with the transport mechanism and accelerating the sheet by moving the leading edge of the sheet in a rotary path as the element foreshortens to feed the sheet to said moving transport mechanism.

4,380,332

SNUBBING DEVICE FOR BLANK CONVEYOR APPARATUS

Dwight M. Davis, Waukegan, Ill., assignor to Stone Container Corporation, Chicago, Ill.

Filed Mar. 13, 1981, Ser. No. 243,357
Int. Cl.³ B65H *31/26*
U.S. Cl. 271—224 **3 Claims**



1. In combination with means for conveying a series of blanks, said conveying means having a release section at which blanks leave the conveying means; and means for receiving and stacking a plurality of blanks from the conveying means; the improvement comprising:

a frame member having a first strap attachment section;

a base member having a second strap attachment section;

means for pivotably coupling the frame member and the base member such that pivotal movement of the frame member with respect to the base member alters the separation of the first and second strap attachment points;

a flexible strap having a first end positioned at the first attachment section and a second end positioned at the second attachment section such that the strap is mounted between the frame member and the base member; and

means for resiliently biasing the frame member away from the base member to maintain the strap under tension while allowing the strap to deflect and rebound when struck by a moving blank;

said frame and base members positioned such that blanks leaving the release section of the conveying means strike the strap, and such that the strap serves to decelerate the blanks without damage to the blanks and then to rebound, thereby causing the blanks to move into the receiving and stacking means.

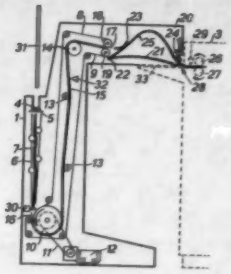
4,380,333

SHEET MATERIAL GUIDING MEANS

George F. A. M. Turner, Ingatestone, England, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Mar. 2, 1981, Ser. No. 239,714
Claims priority, application United Kingdom, Mar. 12, 1980, 8008364
Int. Cl.³ B65H *5/02*
U.S. Cl. 271—272 **5 Claims**

1. In an apparatus for receiving a plurality of sheet films from film cassettes and presenting them in seriatim to an associated film processor, the apparatus comprising a light-tight enclosure having a film cassette introduction port being adapted to receive a film sheet from a cassette which is opened when its openable end is introduced therein, a film exit port located in light-tight operational contact with an associated film processor, and means for guiding the film from said introduction port to said exit port, the improvement wherein said guide means comprises an enclosed gravity-feed entry chute below the film cassette introduction port wherein the film sheet is brought into frictional contact with at least two pairs of wheels of equal circumference mounted fixedly on a free-running non-driven axle which is transverse to the path of travel of the film sheet, the pairs of wheels being mounted in sets of



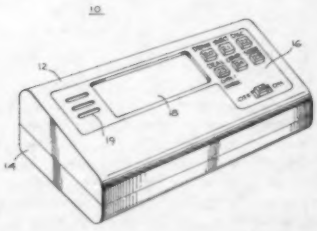
two in staggered relationship, the rims of both wheels of a pair having a high-friction surface, the film sheet passing through the chute by gravitational attraction.

4,380,334

ELECTRONIC CARD GAME SIMULATOR

Michael D. Minkoff, and Raymond W. Kaestner, both of Torrance, Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Mar. 24, 1980, Ser. No. 132,755
Int. Cl.³ A63F *1/00*
U.S. Cl. 273—1 E **6 Claims**

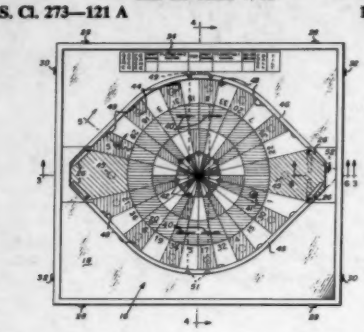


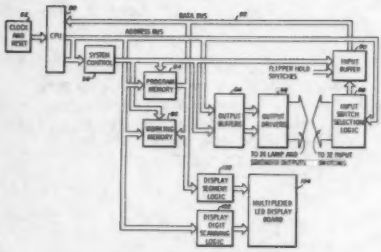
1. A portable machine for simulating the play of a hand of gin rummy in accordance with the rules thereof including a housing; a display mounted by the housing; an electronic data processor mounted in the housing; means for causing the processor to deal two hands and a face up card at random and to control the display to show one of the hands and the face up card; means for causing the processor to take the face up card or draw another card at random for the hand shown on the display; means for causing the processor to discard a selected card from the hand shown on the display; means for signalling that the hand shown on the display has gin or knock; means for drawing cards at random or taking a discard from the hand shown on the display for the other of the two hands; means for discarding a selected card from the other of the two hands to enhance the hand value in accordance with the rules of gin rummy; and means for causing the play of the other of the two hands to be at first or second skill levels, including means for discarding cards in the other of the two hands based on the value of the cards to the hand shown on the display.

4,380,335
PINBALL GAME APPARATUS

Jagdish C. Chaudhry, and Lorena F. Chaudhry, both of Los Altos, Calif., assignors to Michael Wichinsky, Las Vegas, Nev.

Continuation-in-part of Ser. No. 933,069, Aug. 11, 1978, abandoned. This application Dec. 26, 1978, Ser. No. 972,954
Int. Cl.³ A63F 7/02
U.S. Cl. 273—121 A 13 Claims





1. Pinball game apparatus comprising:

means defining a horizontally disposed domed playing field surface having a center and a generally oval-shaped perimeter with at least two goal areas provided on opposite sides thereof, such playing field surface being formed so that all areas thereof slope continuously from said center and toward an associated one of said goal areas, a curvature of said surface transverse of said goal areas being less than a curvature of said surface between the goal area;

a ball disposed to roll upon said playing field surface, the curvatures of said playing field surface insuring that said ball always rolls toward one or the other of said goal areas;

plural ball restraining barrier means disposed around the perimeter of said playing field surface, each barrier means forming a continuous, curved barrier against which said ball can roll and arranged extending between adjacent sides of said goal area;

score accumulating and display means;

a plurality of ball sensing devices disposed along said barrier and coupled to said score accumulating and display means so as to send a scoring signal thereto each time the presence of said ball is detected by one of said devices;

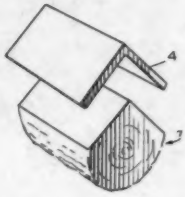
flipper means disposed in front of each said goal area for allowing a player to strike the ball and drive it away from his goal area in a tangential direction relative to said barrier for rolling the ball under centrifugal force along said barrier and around the perimeter of said playing field; and

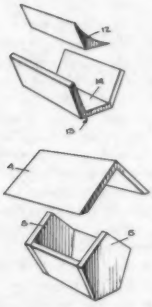
ball sensing means disposed within each goal area and coupled to said score accumulating and display means so as to send a goal signal thereto each time the ball passes behind said flipper means and into one of said goal area.

4,380,336
BIRD HOUSE AND METHOD OF MAKING SAME

Charles D. Pratt, Matinicus Island, Me. 04851

Filed Sep. 28, 1981, Ser. No. 306,088
Int. Cl.³ A63F 9/12
U.S. Cl. 273—157 R 6 Claims



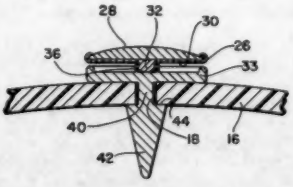


1. A method forming a bird house from a solid generally cylindrical log comprising the steps of dividing the said log into a plurality of separated nesting sections by a plurality of generally straight cuts, forming a separate house roof section, end wall sections, and a combined side and bottom wall section, and combining the sections to form the bird house.

4,380,337
GOLF BALL POSITION MARKING DEVICE

Rocco J. DiMatteo, 3 Brow St., Barrington, R.I. 02806

Filed Nov. 20, 1981, Ser. No. 323,222
Int. Cl.³ A63B 53/14
U.S. Cl. 273—162 D 2 Claims



1. A device for marking the location of a golf ball on a green when such ball is removed for putting, said device adapted for use with a golf putter club of the type having a frictional handle grip of yieldable material covering the upper club end and terminating in a generally solid end cap, said end cap

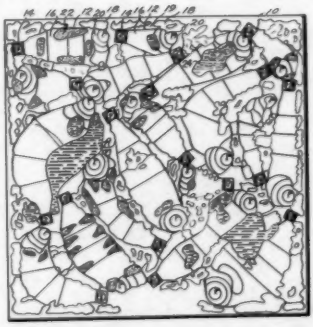
including an end wall having a centrally disposed air vent bore projecting therethrough, said device comprising a substantially rigid, nonyieldable first member having a substantially planar top portion, a shaft portion downwardly extending therefrom and terminating in an enlarged lower portion of an overall conical shape and terminating at its upper end in a generally flat ledge spaced from the lower surface of said top portion a distance equal to or slightly larger than the extent of said end cap air vent bore, said shaft adapted for direct frictional receipt in said bore with said upper ledge surface of said lower portion engaging the lower surface of said end wall and the lower surface of said top portion engaging the upper surface of said end cap end wall so as to positively secure said first member to said golf club grip, said bore adapted to temporarily expand to receive said enlarged lower portion, and a second substantially rigid, disc-shaped member comprising a marker and adapted for removable attachment to said first member, the upper surface of said first member top portion and the marker cooperatively forming attachment means whereby said marker may be secured thereto as in normal play with said club and alternatively detached therefrom when it is desired to utilize the second member as a putting green ball marker said attachment means being of post and pocket construction, said post downwardly extending from the lower surface of said marker and said pocket disposed on the upper surface of said first member top portion whereby said marker is detachably frictionally snap engaged to said first member top portion with a force substantially less than that with which said first member is engaged to said golf club handle grip.

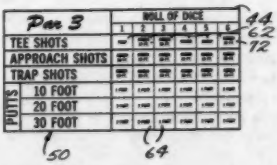
4,380,338

GOLF GAME

Jesse H. Lacy, P.O. Box 109, Moss Point, Miss. 39563

Filed Nov. 17, 1980, Ser. No. 207,360
Int. Cl.³ A63F 3/00
U.S. Cl. 273—245 **6 Claims**





1. A golf game comprising:

a playing board carrying a pictorial configuration of a multi-hole course having associated with the holes tees, fairways, hazards, greens and pins on said greens;

at least one card having disposed thereon first indicia representing distinct areas on each hole on said playing board and second indicia corresponding to shots which advance a ball on each hole;

said first and second indicia being displayed in at least two charts respectively corresponding to at least two categories of said holes, said first indicia corresponding to each of said areas and said second indicia being correlated to said first indicia and corresponding to two or more different ones of said areas;

said at least one card having a plurality of sets of third indicia marked thereon, each set of third indicia corresponding to a different one of said holes, and to one or more of said second indicia, and a plurality of fourth indicia correlated to said third indicia and coreesponding to separate ones of at least two of said areas; and

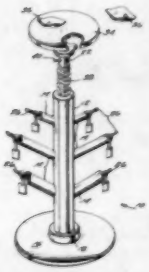
chance means for selecting one of said plurality of second and third indicia so as to advance said ball from one of said areas corresponding to one of said plurality of first indicia to another area corresponding to said one of said plurality of second and third indicia.

4,380,339

GAME DEVICE

Andrew Jones, Jr., 608 Easton Ave., NW., Washington, D.C. 20019

Filed Aug. 13, 1981, Ser. No. 292,608
Int. Cl.³ A63F 9/02; F41J 7/00
U.S. Cl. 273—384 **15 Claims**



1. A game device comprising:

an elongated trunk element;

a plurality of elongated limb elements;

trunk means defining an elongated trunk cavity for axially positioning said elongated trunk element for reciprocal movement therein, said trunk means including a plurality of limb means each defining a limb cavity for axially positioning at least one of said limb elements therein;

means for hingedly connecting said plurality of limb elements to said trunk element;

platform means transversely mounted to said trunk element for supporting weighted objects thereon; and

biasing means for biasing said trunk element in an upward direction so that said trunk element will be yieldably depressed in said trunk cavity in response to successive weighted objects coming to rest upon said platform means.

4,380,340

BLEEDER ATTACHMENT FOR ARROWS

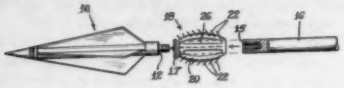
Miroslav A. Simo, 370 N. Delaplaine Rd., Riverside, Ill. 60546

Filed Sep. 10, 1981, Ser. No. 301,027
Int. Cl.³ F41B 5/02
U.S. Cl. 273—416 **9 Claims**

1. A bleeder attachment for fitting over the shaft portion of an arrow having a detachable arrowhead portion, said bleeder attachment comprising:

a body element of generally tubular shape having a bulbous

outer surface, a forward and a rearward end and having a cylindrical through opening centered about its long axis, the forward end of said cylindrical through opening having an inwardly extending lip; and



a plurality of barbs secured to said outer surface extending outwardly and disposed toward said forward end.

4,380,341

LABYRINTH SEAL FOR SLIP RING SWITCH FOR STEERING WHEELS OF MOTOR VEHICLES

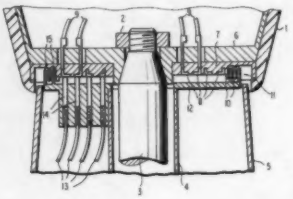
Heinz Waldschütz, Ostfildern; Franz Raüner, Stuttgart, and Helmut Patzelt, Fellbach, all of Fed. Rep. of Germany, assignors to Daimler-Benz A.G., Stuttgart, Fed. Rep. of Germany

Filed Mar. 8, 1982, Ser. No. 354,919

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1981, 3108757

Int. Cl.³ F16J *15/44;* H01H *9/04*

U.S. Cl. 277—56 **8 Claims**



1. A slip ring arrangement for a steering wheel of a motor vehicle, the arrangement including at least one slip ring, spring-mounted mating contact means cooperable with the at least one slip ring for enabling a transmitting of an electrical current to components of the motor vehicle, characterized in that a labyrinth seal means is provided for sealing the slip ring arrangement with respect to a passenger compartment of the motor vehicle.

4,380,342

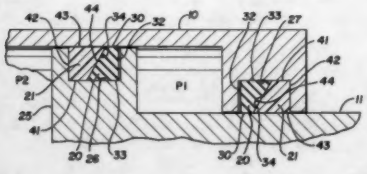
FLUID SEALING DEVICES

George K. Fling, Dallas, Tex., assignor to Vought Corporation, Dallas, Tex.

Filed Sep. 22, 1980, Ser. No. 189,548

Int. Cl.³ F16J *15/09*

U.S. Cl. 277—188 A **9 Claims**



1. Apparatus for forming a fluid seal between mating surfaces of first and second members movable with respect to each other wherein said second member separates a first area, containing a fluid at a first pressure, and a second area containing a fluid at a second, lower pressure, comprising:

(a) an elastomeric sealing device which is in communication with said first area and which is substantially trapezoidal in cross-section contained within a recess in one of said mating surfaces with the shorter base thereof contacting the other of said mating surfaces, the elastomeric having a shorter leg disposed toward said first area and a diagonally extending, longer leg; and

(b) a resilient, pliable, anti-extrusion device which is more rigid than said elastomeric device and which is also substantially trapezoidal in cross-section contained within said recess, the anti-extrusion device having a diagonal leg mating with and being of equal length with the diagonal, longer leg of said elastomeric device, the longer base thereof also contacting said other of said mating surfaces, the fluid in said first area comprising means exerting force upon the shorter base of said elastomeric device for urging the elastomeric device toward said diagonal leg of said anti-extrusion device, said elastomeric device comprising means for transferring said force directly to the diagonal leg of the anti-extrusion device and for acting as a wedge against the longer base of the anti-extrusion device to urge said anti-extrusion device against said other mating surface for preventing extrusion of the elastomeric device between the anti-extrusion device and said other mating surface.

4,380,343

FOLDING SCISSOR FRAME WHEEL CHAIR

Walter Lovell, 348 Mountain Rd., and Richard Lawrence, 39 Manchonis Rd., both of Wilbraham, Mass. 01608

Filed Apr. 24, 1978, Ser. No. 898,902

Int. Cl.³ B62M *1/14*

U.S. Cl. 280—242 WC **8 Claims**

1. A wheel chair comprising a pair of generally parallel spaced vertical scissor frames extending fore and aft of the chair, a seat frame, a back rest frame, means for detachably connecting a portion of one of the scissor frames with respect to the seat frame to hold the scissor frames and the chair erect, said means being releasable to allow the scissor frames to fold into general parallelism with and in close association to the seat frame, and means pivotally mounting the back rest frame with respect to the seat frame to allow it to move into parallel relationship therewith,

hand wheels rotatably mounted on the scissor frames adjacent the point of pivotal connections of said scissor frames,

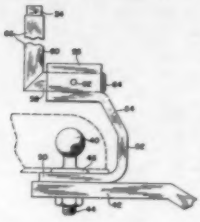
driving wheels rotatably mounted on one of said scissor frames, a chain connecting the wheels so that the hand wheels drive the driving wheels, the driving wheels being located at the rear of the chair and the hand wheel being intermediate of the ends of the frames and means to adjust the tension of the chain.

4,380,344

TRAILER HITCH CYCLE RACK

Frederick H. Abbott, Main St., East Princeton, Mass. 01517

Division of Ser. No. 84,606, Oct. 15, 1979, Pat. No. 4,301,953.
This application Jun. 3, 1981, Ser. No. 269,996
Int. Cl.³ B60R 9/10
U.S. Cl. 280—402 2 Claims



1. In combination with a trailer hitch for securing a power vehicle with respect to a trailer, said trailer hitch including a plate on the vehicle and a ball on the plate, that improvement which includes a support for a cycle rack located on said trailer hitch and leaving the hitch free of impediments so it can be used in the normal way,

said improvement comprising means forming a socket, means to connect the same with respect to one part of the trailer hitch, said socket being spaced from the operative parts of the hitch,

a cycle rack, a depending column supporting said cycle rack, and means for securing said column at the lower end thereof with respect to said socket in upright condition of said column, said socket being horizontal and said column including a foot extending at an angle thereto for reception in said horizontal socket,

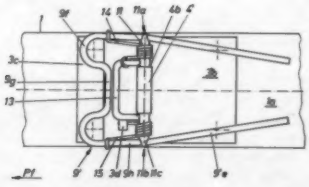
means to attach the ball to the plate on the vehicle, and the socket forming means including a plate secured between the ball and the plate to which the ball is secured by the ball attaching means.

4,380,345

SKI BRAKE

Heinz Wittmann, Vienna, Austria, assignor to TMC Corporation, Baar, Switzerland

Division of Ser. No. 46,553, Jun. 7, 1979, abandoned. This application Apr. 17, 1981, Ser. No. 255,076
Claims priority, application Austria, Jun. 22, 1978, 4533/78
Int. Cl.³ A63C 7/10
U.S. Cl. 280—605 3 Claims



1. A ski brake for use on a ski, comprising:

a base plate adapted to be mounted on said ski;

first and second bearing means on said base plate;

a pair of laterally spaced brake arms pivotally and laterally slidably mounted on said first bearing means, each of said brake arms having a brake leg portion and a pedal portion, said brake arms each being pivotal between (1) a braking position wherein said brake leg portions project beneath the running surface of said ski and said pedal portion extends upwardly inclined to the upper surface of said ski and (2) a retracted position wherein said brake leg portions and said pedal portion extend above said upper surface of said ski;

a control part and pivotal securement means pivotally securing said control part to said second bearing means, said pivotal securement means effecting, upon a pivotal movement of said control part relative to said pedal portions between an initial position wherein said brake arms are positioned in their laterally outermost position and a final position wherein said brake arms are positioned in their laterally innermost position, a laterally inward movement of said brake arms;

resilient means effecting an erection of said brake arms to said braking position and an urging of said control part to said initial position thereof to urge said brake arms to their said initial position thereof;

said pedal portions being integrally connected to each other so that said brake legs and said pedal generally define a U-shape, said first bearing means including separate axle segments on said brake legs extending inwardly toward a central longitudinal axis of said ski; and

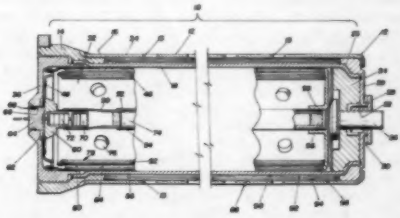
said pivotal securement means including a hollow sleeve rotatably supported on said base plate by said second bearing means and about an axis extending perpendicular to said longitudinal axis of said ski, said hollow sleeve receiving said separate axle segments in opposite ends thereof to thereby define said first bearing means, said control part including an operating bar fixedly secured to said hollow sleeve and movable therewith.

4,380,346

METHOD OF AND APPARATUS FOR SPEEDING THE RESPONSE OF AN AIR BAG INFLATOR AT LOW TEMPERATURES

Leland E. Davis, Brigham City; David P. Duhle, Logan; Fred E. Schneiter, North Ogden, and George F. Kirchoff, Brigham City, all of Utah, assignors to Thiokol Corporation, Newtown, Pa.

Filed Apr. 24, 1981, Ser. No. 257,285
Int. Cl.³ B60R 21/08
U.S. Cl. 280—736 4 Claims



2. In an inflator for an air bag comprising housing means having wall means that define a combustion chamber, said wall means having gas discharge perforations formed therein and including rupturable means for normally sealing said perforations,

a combustible gas generant composition disposed in said combustion chamber, said composition being operable upon ignitition to produce gas and combustion products, the generation of gas within said housing being characterized in that the rise in pressure to a peak value tends to be slowed when the ambient temperature is low, said rupturable means of said wall means of said housing rupturing upon the attainment of a certain threshold value that is less than said peak value,

means for filtering the generated gas, and

means for discharging the filtered gas to an air bag,

the improvement comprising

means buttressing said rupturable means to delay the rupture

thereof unitl the pressure of the generated gas therein reaches a predetermined value that is higher than the certain threshold value thereby to shorten the time for attaining the peak gas pressure value within the combustion chamber, and resulting in faster, more satisfactory generation of gas and inflation of the air bag when the ambient temperature is low and the rate of gas generation tends to be slowed,

said means for buttressing said rupturable means comprising a layer of foil, said layer of foil buttressing said rupturable means with respect to some only of said perforations.

4,380,347

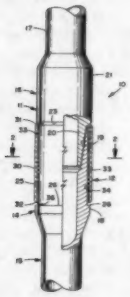
WELL TOOL

Donald E. Sable, 4413 Windsor Pkwy., Dallas, Tex. 75234

Filed Oct. 31, 1980, Ser. No. 202,795

Int. Cl.³ F16L *57/00*

U.S. Cl. 285—45 **1 Claim**



1. A well tool including: a tool joint comprising a pin half on one section of an elongate tubular member having a reduced threaded end portion, and a box half on another elongate tubular member having a threaded bore in which said reduced threaded end portion is disposed, one of said tool joint halves having an externally reduced end portion providing an annular external shoulder, the other of said joint halves having an external annular shoulder, said shoulders facing one another; and a protector longitudinally and rotatably disposed on said reduced end portion of said one of said joint halves, said protector comprising a tubular mandrel having an internal diameter greater than that of said reduced end portion of said one of said joint halves and an external diameter greater than that of said annular shoulder whereby longitudinal movement of said mandrel relative to said joint halves is limited by said shoulders; and a plurality of longitudinally extending resilient compression members circumferentially spaced in said mandrel and secured thereto, said compression members being compressed between said mandrel and said reduced end portion of said one of said joint halves, said compression members permitting rotation of said mandrel relative to said tool joint.

4,380,348

PIPE CLAMPING ASSEMBLY

Frederick R. Swartz, Needham Heights, Mass., assignor to Clamp-All Corp., Billerica, Mass.

Filed Feb. 18, 1981, Ser. No. 235,531

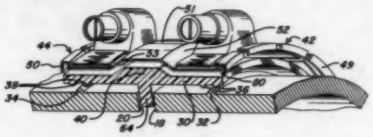
Int. Cl.³ F16L *21/06*

U.S. Cl. 285—236 **4 Claims**

1. In a clamping assembly for joining two pipes in end to end relationship in a clamping position and having a flexible, corrosion resistant sheet metal clamping band of defined circumferential length having a first encircling end and a second encircling end axially spaced from the first encircling end, with a preformed raised central section extending generally the defined circumferential length of the clamping band,

and band strap retaining areas extending on both sides of said central section, with tension bands mounted in said retaining areas on both sides of said central section adjacent said ends, said clamping band enclosing an underlying elastomeric compressible, circumferential sealing gasket having first and second gasket end surfaces and partially mounted against movement by said central section,

the improvement comprising said first and second encircling ends extending from said retaining areas with said ends each carrying an upwardly and reversely extending section defining an inwardly directed substantially continuous, integral, bent over sheet metal flange having the thickness of said sheet metal facing said pipe positioned to extend toward an underlying pipe to grip said pipe and to prevent unwanted movement of said sealing gasket under operating conditions of said assembly with each said substantially continuous flange providing a stop against outward flow of said gasket beyond said flange by engaging substantially the entire end surface of said gasket so that said flange prevents cold flow beyond the flange.



4,380,349

COUPLERS FOR LATCHING TYPE PLUGS

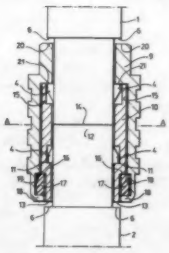
John Bray, Sheffield, England, assignor to Staeng Ltd., Cornwall, England

Filed May 22, 1980, Ser. No. 152,360

Claims priority, application United Kingdom, May 23, 1979, 7918001

Int. Cl.³ F16L *21/00*

U.S. Cl. 285—417 **3 Claims**



1. A plug connector to enable the coupling of first and second plugs attached to fibre optic cables and to maintain substantial abutment between the ends of the first and second plugs, said plug connector comprising:

a first annular member having an internal diameter fractionally larger than the diameters of the two plugs;

a second annular member containing said first annular member and having a first section with an internal diameter equal to the internal diameter of the first annular member, a second section having an internal diameter fractionally larger than the external diameter of the first annular member, a shoulder defined by the intersection of said first and second sections, and a third section having a recess;

a resilient member located within said recess and protruding therefrom, said first member having shoulder means thereon to abut said resilient member, the arrangement being such that the first annular member has limited slide-

able movement within the second section of the second annular member;

a first recess provided in the first annular member at the end where it abuts against the shoulder, said first recess being provided to receive latching means of said second plug which is slideable into said second annular member;

a second recess provided in said first annular member, distant from said first recess for receiving latching means provided on said first plug which is slideable into said first annular member;

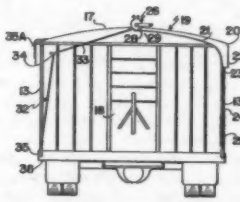
whereby said first and second plugs, first and second annular members and resilient member are so constructed and arranged that when said plugs are inserted into the coupling member said shoulder means on said first member abuts and compresses said resilient members causing said first and second member to bias and maintain said plugs in contact with one another.

4,380,350

TRUCK BOX TARPAULIN ASSEMBLY

Gordon Block, Box 265, Leroy, Saskatchewan, Canada (S0K 2P0)

Filed Dec. 31, 1980, Ser. No. 221,900
Int. Cl.³ B60J 11/00
U.S. Cl. 296—98 4 Claims



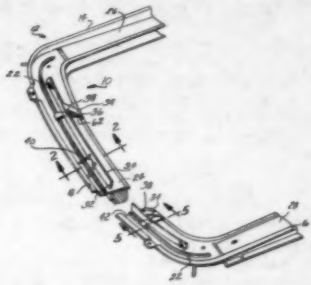
1. A tarpaulin cover assembly for the open upper side of a truck box which includes a pair of side walls, a rear end wall, and a front end wall; said tarpaulin cover assembly comprising in combination a substantially rectangular tarpaulin adapted to cover the open upper side of the truck box when in the fully extended position, means to fasten one longitudinal edge of the tarpaulin to one side wall, longitudinally extending roller means secured to the other longitudinal edge of said tarpaulin and means to rotate said roller means, said roller means being supported for transverse rolling motion upon the upper edges of the front and back end walls of the truck body, and means operatively extending between said roller means and said truck body to tension said tarpaulin transversely at all times, said means operatively extending between said roller means and said truck body to tension said tarpaulin transverely at all times including a cable and spring assembly secured upon each of the end walls of said truck box, said roller assembly including a cable drum at each end thereof to receive the cable of said cable and spring assembly and means to secure said cables one to each of said cable drums, said means to rotate said roller means including a handle secured to said roller means at least at one end thereof, a crank pin extending from said handle adjacent the distal end thereof, an elongated actuating member pivotally secured by one end thereof to said crank pin for rotating said handle of said crank pin and means detachably securing said distal end of said handle to said end wall to secure said tarpaulin in the desired position against pressure of said springs.

4,380,351

SUNROOF AIR DEFLECTOR

Norman L. Sorensen, Detroit, and Lothar Pohl, Sterling Heights, both of Mich., assignors to Wisco Corporation, Ferndale, Mich.

Filed Feb. 23, 1981, Ser. No. 236,895
Int. Cl.³ B60J 7/22
U.S. Cl. 296—217 6 Claims



4. In a motor vehicle having an opening formed in a roof thereof, a frame around the perimeter of the opening defining longitudinally extending edges and front and rear transverse edges, a slidable roof panel movable between a closed position closing the opening and an open position opening the opening, the improvement comprising:

an air deflector having an upper edge and a lower edge extending across the front transverse edge, said air deflector being movable from a deployed position above the roof to a retracted position;

the frame including a recessed front inward extending transverse ledge and a pair of opposed longitudinal inward extending ledges to support the panel flush with the roof; the frame further including a transverse channel formed in said front inward extending ledge, said air deflector being nestingly engageable with said transverse channel;

said air deflector being supported by a hinge, said hinge being hingedly attached at a lower end to said front inward extending ledge, and at an upper end to said air deflector upper end;

means for biasing said air deflector in the deployed position above the panel when the panel is in the open position; said biasing means including:

a spring retaining notch formed along said lower edge;

a wire spring engaging said spring retaining notch comprising a central horizontal portion positioned above the notch, a pair of opposed loops formed at the ends of the central horizontal portion extending downward then curving forward then upward to snugly embrace the notch at the inside corners thereof, said opposed loops then curving arcuately outward then extending downward linearly to define a pair of opposed legs, said opposed legs extending moderately forward and outward terminating at an outward curved end; and

said outward curved ends biased against a forward corner of said transverse channel causing an outward spreading of said opposed legs and an upward and forward biasing of said air deflector toward the deployed position;

a hinge support secured to the front inward extending ledge;

said hinge support hinged to said hinge lower end;

a lower stop formed on said hinge lower end, said lower stop selectively abutting said hinge support limiting the upward movement of said hinge upper end;

a pair of transversely aligned apertures formed in said hinge upper end;

a hinge notch formed in said upper edge to slidingly received said hinge upper end;

a hinge notch formed in said upper edge to slidingly receive said hinge upper end;

a hinge pin slidingly supported by said transversely aligned apertures with a pair of pin opposed ends projecting transversely from said aligned apertures;

a pin receiving groove formed along said upper edge to securely receive said pin opposed ends hingedly securing said upper edge to said hinge upper end;

said hinge upper end including an upper stop formed integrally therewith selectively abutting an edge of said hinge notch limiting the forward movement of said deflector lower edge; and

whereby said lower stop limiting the upward movement of said hinge upper end and said upper stop limiting the forward movement of said deflector lower edge defines the air deflector deployed position; and

means for automatically retracting said air deflector to the retracted position when the panel is moved to the closed position.

4,380,352

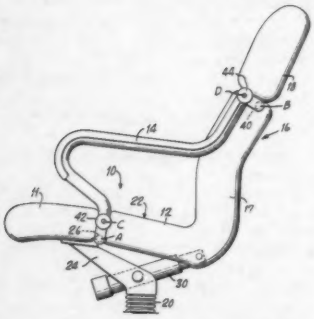
RECLINING CHAIR

Niels Diffrient, New York, N.Y., assignor to Knoll International, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 47,120, Jun. 11, 1979, abandoned. This application Sep. 30, 1980, Ser. No. 192,377

Int. Cl.³ A47C *1/02*

U.S. Cl. 297—61 **16 Claims**



1. An articulated chair or the like, comprising:

(a) a base;

(b) a seat element, supported on the base, having a forward portion and a rearward portion tiltable about a first, horizontal axis relative to the forward portion;

(c) a backrest element, supported on the seat, having a lower portion tiltable relative to the base about said first axis and an upper portion tiltable relative to the lower portion about a second axis parallel to the first axis; and

(d) a pair of unitary rigid armrests respectively disposed on opposite sides of said seat;

wherein the improvement comprises:

(e) each of said armrests having a forward end portion connected to said base for pivotal movement relative thereto about a third axis spaced from and parallel to said first axis and a rearward end connected to said upper backrest portion for pivotal movement relative thereto about a fourth axis spaced from and parallel to the second axis, such that said armrests constitute a linkage for tilting the backrest upper portion forwardly relative to the backrest lower portion upon rearward tilting movement of the backrest lower portion relative to the base, and

(f) the seat and backrest elements each comprising

(i) a peripheral frame divided, along the axis of tilting of one portion of the element relative to the other portion of the element, into two rigid frame parts pivotable relative to each other about the last-mentioned axis and cooperatively surrounding a central area of the element extending through the locality of the last-mentioned axis;

(ii) a flexible load-bearing diaphragm extending substantially entirely over said area and fastened to said frame, such that when the one portion of the element is tilted relative to the other, the central portion of the diaphragm assumes a compound curved configuration comfortably supporting the user; and

(iii) an upholstery body extending over and supported by the diaphragm and the frame.

4,380,353

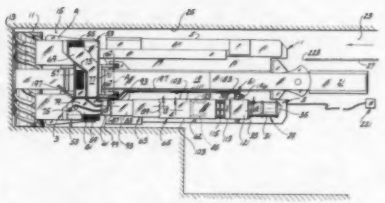
DUST CONTROL SYSTEM AND METHOD OF OPERATION

John A. L. Campbell, Mascoutah; Daniel J. Moynihan; William D. Roper, both of Belleville, and Earl C. Willis, Benton all of Ill., assignors to Peabody Coal Company, St. Louis, Mo.

Continuation of Ser. No. 20,280, Mar. 14, 1979, abandoned. This application Jul. 13, 1981, Ser. No. 282,430

Int. Cl.³ E21C *7/08*; B01D *47/06*

U.S. Cl. 299—12 **23 Claims**



1. A machine comprising a vehicle having at one end constituting its forward end a boom pivoted for up and down swinging movement about an axis extending transversely of the vehicle and extending forward from the vehicle, a cutter head carried by the boom, and means for carrying away material cut by the cutter head comprising a conveyor extending longitudinally of the vehicle for conveying the material back toward the rearward end of the vehicle, said cutter head when operated to cut causing dust to be present in the air at the forward end of the vehicle, which dust may include particles in the size range below 5 microns, and a dust control system for said machine comprising:

a fan mounted on the vehicle adjacent one side of the vehicle alongside the conveyor toward the rearward end of the vehicle, said fan comprising a housing having an inlet and an outlet and means in the housing for causing a flow of air from the inlet to and out through the outlet;

a system of ductwork forming a passage for induced flow of air from the vicinity of the forward end of the vehicle to the inlet of the fan housing, said ductwork system comprising an air intake section associated with the boom and swingable up and down with the boom, said air intake section having bottom inlet openings for upward flow of dust-laden air from below the boom into said air intake section, and having an air outlet at its rear at said one side of the vehicle, said ductwork system further comprising a telescoping duct section and a fixed duct section extending longitudinally of the vehicle alongside said conveyor adjacent said one side of the vehicle from said air outlet of said air intake section to the inlet of said fan housing, said telescoping section being hinged at its forward end to said air outlet of said air intake section and hinged at its rearward end to the forward end of said fixed duct section;

a flooded bed scrubber in said fixed duct section for effecting entrainment in droplets of water of dust, including respirable dust in said range, which is in the air flowing through said fixed duct section as a result of the cutting of the material, said flooded bed scrubber comprising a bed of

fibers extending across said fixed duct section through which the air may flow, and means for maintaining the fibers of said bed wetted with water, for entrainment in droplets of water of dust including respirable dust in said range by inertial impaction of the dust on the wetted fibers of the bed on drawing air through the bed at a sufficiently high velocity for said inertial impaction, the fan having the capacity for drawing the air through the bed at such velocity, the dust-laden droplets passing through the bed and downstream from the bed in the air flowing through said fixed duct section;

means in the fixed duct section between the bed and the inlet of the fan housing for separating the dust-laden droplets of water from the air flowing through the fixed duct section before the droplets reach the fan, said separating means being constructed and arranged for downward flow of the dust-laden droplets;

said fixed duct section having a bottom exit at the separating means for drainage of the dust-laden water therefrom;

a sump on the vehicle below said exit for receiving the dust-laden water; and

means for pumping to a place of disposal the dust-laden water collecting in the sump.

11. A method of controlling dust generated by operation of equipment in an entry of a coal mine wherein the equipment is operated at the working face of the entry and its operation generates dust which may include respirable dust in the size range below 5 microns at said face, comprising:

passing dust-laden air from said face through a dust control system comprising a passage and a fan, the flow being from the face through the passage to the fan, and being induced by operation of the fan to draw the dust-laden air through the passage,

scrubbing dust from the air as it flows through said passage by entraining the dust, including said respirable dust in the size range below 5 microns, in droplets of water, the dust-laden droplets of water flowing downstream through said passage in the air flowing through said passage,

separating the dust-laden droplets of water from the air flowing through said passage before the droplets reach the fan, whereby the fan operates in relatively droplet-free and dust-free air,

and collecting and disposing of the dust-laden droplets.

4,380,354

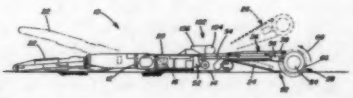
MINING MACHINE LOADING BIN MOUNTED ON BOOM STRUCTURE AND METHOD

Maurice K. LeBegue, Argillite, Ky., assignor to National Mine Service Company, Pittsburgh, Pa.

Filed Mar. 12, 1981, Ser. No. 242,832

Int. Cl.³ E21C *27/24*

U.S. Cl. 299—18 **19 Claims**



16. A method of dislodging solid material from a mine face comprising the steps of,

rotatably supporting a material dislodging device on a boom member at the front end of a mining machine,

positioning the material dislodging device opposite a mine face,

sumping the material dislodging device into contact with the mine face,

pivoting the boom member to move the material dislodging device through an arcuate path between the mine roof and floor to dislodge solid material from the mine face,

carrying a material receiving bin on the boom member rearwardly of the material dislodging device for movement with the material dislodging device as a single unit,

rotating the material dislodging device in a direction to convey the dislodged material over the material dislodging device and rearwardly into the material receiving bin,

feeding the dislodged material rearwardly through the material receiving bin and onto a conveyor extending rearwardly of the material dislodging device, and

transporting the dislodged material on the conveyor rearwardly on the mining machine.

4,380,355

GAS-LUBRICATED BEARINGS

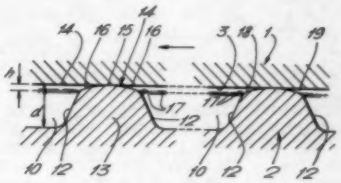
Geoffrey Beardmore, 20 Oak Manor Dr., Cheltenham, Gloucestershire, England

Filed Nov. 24, 1980, Ser. No. 210,072

Claims priority, application United Kingdom, Nov. 22, 1979, 7940407

Int. Cl.³ F16C *32/06*

U.S. Cl. 384—123 **7 Claims**



1. A gas-lubricated bearing of the kind comprising first and second bearing members having first and second respective opposed surfaces, the first surface being smooth and uninterrupted, and the second surface being provided with a region of spiral grooves separated by lands arranged such that relative movement between the first and second members causes entrainment of gas along said grooves and generation of a gas film between the members, the improvement wherein said lands each have an upper surface of convex profile, the region of the lands closest the surface of said first member being located intermediate the edges of the upper surface of the lands thereby forming substantially wedge-shaped cross-sectional regions between said first and second members on opposite sides of the region of the lands closest the surface of said first member.

4,380,356

GENERATOR ROTOR, ESPECIALLY TURBO-GENERATOR ROTOR WITH SUPERCONDUCTING FIELD WINDING

Erich Weghaupt, Mülheim, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed May 20, 1981, Ser. No. 265,650

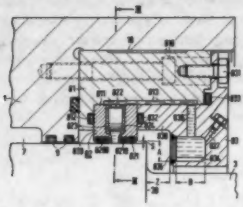
Claims priority, application Fed. Rep. of Germany, May 23, 1980, 3019864

Int. Cl.³ F16C *33/74*

U.S. Cl. 384—133 **8 Claims**

1. Generator rotor, comprising an inner and an outer concentric rotor part having a non-drive side and enclosing a high-vacuum space, a first and a second bearing disposed on said non-drive side, a hollow shaft end of said outer rotor part being supported in said first bearing, a journal of said inner rotor part being extended through said hollow shaft end and separately supported in said second bearing, a high-vacuum contactless liquid seal disposed between said hollow shaft end

and said journal and having a sealing gap formed therebetween, a co-rotating sealing-liquid reservoir connected to said



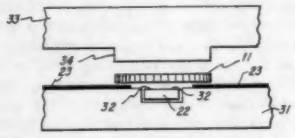
liquid seal, and magnetic field means for holding magnetic sealing liquid in said sealing gap.

4,380,357

SYSTEM AND METHOD FOR EFFECTING ELECTRICAL INTERCONNECTIONS USING A FLEXIBLE MEDIA WITH RADIALLY EXTENDING ELECTRICAL CONDUCTORS

Doyle R. Evans, and Richard E. Tuthill, both of Lubbock, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 3, 1980, Ser. No. 203,020
Int. Cl.³ H01R 9/09
U.S. Cl. 339—17 CF **25 Claims**



1. A device for electrically interconnecting first and second sets of electrical components, said first set of electrical components disposed at first equal angular intervals about a first circle and said second set of electrical components disposed at said equal first angular intervals about a second circle, said second circle having a greater radius than and concentric with said first circle, said device comprising:

(a) a flexible media having first and second opposite major surfaces;

(b) a plurality of electrical conductors extending radially outward from a central portion of said first major surface with insulative material interposed between said conductors, said electrical conductors disposed at equal second angular intervals, said second angular intervals less than said first angular intervals, said electrical conductors further having equal width at any given radial distance from said central portion and having increasing width in a direction radially outward from said central portion;

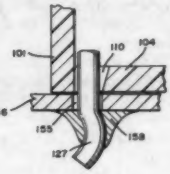
(c) radially inward portions of selected ones of said conductors for being positioned in contact with respective ones of said first set of electrical components and radially outward portions of said selected ones of said conductors for being positioned in contact with respective ones of said second set of electrical components, thereby electrically interconnecting said first and second sets of components.

4,380,358

LAMP SOCKET

Larry F. Trafford, Owen Sound, Canada, assignor to General Signal Corporation, Stamford, Conn.

Filed Dec. 5, 1980, Ser. No. 213,294
Int. Cl.³ H01R 9/12
U.S. Cl. 339—17 D **18 Claims**



1. A lamp socket for accommodating a lamp and comprising in combination:

(a) a non-conducting housing having a side wall and a base and adapted to accommodate a lamp;

(b) a first contact member captured by cooperative coaction with said side wall of said housing and in a predetermined relationship with respect thereto and including:

(1) a first portion projecting inward from said side wall for contacting the base of a lamp inserted into said housing; and

(2) a second portion projecting through a first opening in said base of said housing for accommodating an external electrical connection;

(c) a second contact member captured by cooperative coaction with said housing and including:

(1) a first section comprising a spring projecting longitudinally upward from said base of said housing for contacting the base contact of a lamp inserted in said housing; and

(2) a second section projecting through a second opening in said base of said housing for accommodating an external electrical connection; and wherein

(d) at least one of said second portion and said second section, comprises a non-linear yielding member for coacting with a printed circuit board, when said lamp socket is placed in cooperative engagement therewith by placing said second portion and said second section through cooperating openings of the printed circuit board, each opening of which is larger in cross section than the associated second portion or second section, respectively, whereby to secure said lamp socket to the printed circuit board prior to soldering by the coaction of the yielding member with a portion of the perimeter of the associated opening.

4,380,359

ELECTRICAL CONNECTOR FOR AN INSTRUMENT PANEL

Robert P. Hoffman, Grand Blanc, and Lavern E. Chandler, Davison, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 5, 1980, Ser. No. 213,460
Int. Cl.³ H01R 9/07, 31/08
U.S. Cl. 339—17 F **3 Claims**

1. In a vehicle instrument panel, means for electrically connecting an instrument to a circuit comprising

an instrument panel housing formed of insulating material having an integral substantially rigid pin projecting from a surface of the housing,

the circuit including a printed circuit carried by the housing on said surface, an exposed conductor in the printed circuit adjacent and spaced from the pin,

an instrument positioned adjacent the housing and having a conductive portion facing the printed circuit, and

an elongated resilient conducting clip having free ends and a contact portion at each end, the contact portions electrically seating in flexed-down spring engagement against the said conductive portion of the instrument and the

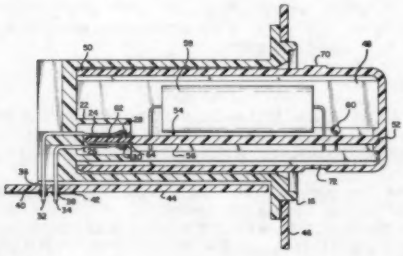
exposed conductor on the printed circuit, respectively, for electrically connecting the printed circuit and the instrument, the clip further having means intermediate the contact portions for gripping the pin to hold the clip in bridging position.

4,380,360

CARTRIDGE, HOLDER AND CONNECTOR SYSTEM

Kenneth R. Parmer, Harrisburg, and William J. Stape, Lewisberry, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 3, 1981, Ser. No. 269,939
Int. Cl.³ H01R *23/70*
U.S. Cl. 339—17 CF 8 Claims



1. A cartridge receiving holder and connector system comprising:

a holder housing defining therein a cartridge receiving cavity, a front face defining a profiled opened entry to one end of said cavity, and connector means at the opposite end of said cavity directed therein and connected to circuits of external circuit means; and

a cartridge having a housing with an outer profile receivable in said holder housing cavity and defining a cavity therein, a circuit board assembly received in said cartridge housing cavity and including a circuit board with components mounted thereon, one end of said circuit board being accessible through an open end of said cartridge housing cavity,

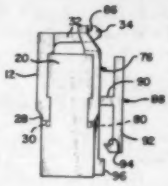
whereby said cartridge is received in said holder cavity with the contacts of said holder engaging said circuit board through the open end of said cartridge cavity.

4,380,361

ELECTRICAL CONNECTOR COVER KIT

John C. Asick, Harrisburg; Donald A. Berry, Elizabethtown, and John E. Lucius, Enola, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 2, 1981, Ser. No. 239,809
Int. Cl.³ H01R *13/514*
U.S. Cl. 339—91 R 5 Claims



1. A cover kit f. : an electrical connector said kit comprising:

a first cover and a plurality of second covers each having a profile different from the others of said second covers,

said first cover having a forward edge with means to engage a first side of a housing of an electrical connector and a plurality of parallel spaced latching legs at an opposite rear edge enclosing and extending across a rear portion of said housing,

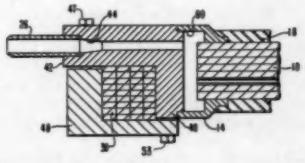
said second cover having a forward edge with means to engage the opposite side of said housing and an opposite rear edge profiled to define a plurality of apertures for intermating engagement with said latching legs of first cover to be detachably latched thereto enclosing said housing.

4,380,362

DIRECTLY COOLED BOLTED SERIES CONNECTION OF GENERATOR STATOR COILS

Roger L. Swensrud, Plum Borough; Dennis Pavlik, Murrysville, and John J. DeLuca, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 23, 1981, Ser. No. 256,634
Int. Cl.³ H01R *13/00*
U.S. Cl. 339—112 L 8 Claims



1. A fluid cooled electrical connection apparatus, comprising:

a conductive first member, said first member having a tubular hole therethrough, said tubular hole having a first and a second terminus;

a nozzle, said nozzle having a first and a second terminus, said first nozzle terminus being connected to said first terminus of said tubular hole, said nozzle being in fluid communication with said tubular hole;

a second member, said second member being connectable to said first member, said second member being generally L-shaped;

a first conductor, said first conductor having one terminus disposed between said first and second member;

means for causing said first and second members to be pulled

together and to secure said first conductor between said first and second member;

a second conductor, said second conductor having fluid channels therethrough said second conductor being connected to said first member, said fluid channels of said second conductor being in fluid communication with said second terminus of said tubular hole, whereby said fluid channels of said second conductor are in fluid communication with said nozzle; and

whereby said second conductor is in electrical communication with said first conductor.

4,380,363

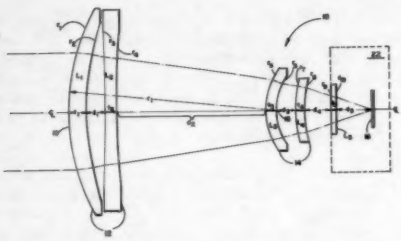
FOUR ELEMENT INFRARED OBJECTIVE LENS

Thomas P. Fjeldsted, West Covina, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 3, 1981, Ser. No. 251,026

Int. Cl.³ G02B 1/00

U.S. Cl. 350—1.3 **2 Claims**



1. An infrared lens system comprising:

a forward assemblage and a rearward assemblage,

said forward assemblage including a lens L1 composed of silicon and a lens L2 composed of germanium,

said rearward assemblage including a lens L3 composed of germanium, a lens L4 composed of silicon and a window L5 of sapphire,

said lens L1 having forward and rearward radii r1 and r2, respectively,

said lens L2 having forward and rearward radii r3 and r4, respectively,

said lens L3 having forward and rearward radii r5 and r6, respectively,

said lens L4 having forward and rearward radii r7 and r8, respectively,

said window L5 having forward and rearward radii r9 and r10, respectively,

the thickness of said lens L1, L2, L3, L4, and window L5 being designated by t1, t2, t3, t4, and t5, respectively,

the distances between said lens L1 and L2 being designated d1,

the distance between said lens L2 and L3 being designated d2,

the distance between said lens L3 and L4 being designated d3,

the distance between said lens L4 and window L5 being designated by d4,

the relationship among said lenses being as set forth in the table following:

TABLE

Lens Element	Radius	Thickness and Spacing	Material
L_1	$r_1 = 1.838 \pm 0.002$	$t_1 = 0.125 \pm 0.004$	Si
	$r_2 = 2.674 \pm 0.005$	$d_1 = 0.125 \pm 0.006$	Air
L_2	$r_3 = 121.0 \pm 2.4$	$t_2 = 0.125 \pm 0.010$	Ge
	$r_4 = 14.882 \pm 0.031$	$d_2 = 1.217 \pm 0.020$	Air
L_3	$r_5 = 0.587 \pm 0.001$	$t_3 = 0.100 \pm 0.002$	Ge
	$r_6 = 0.504 \pm 0.001$	$d_3 = 0.129 \pm 0.004$	Air
L_4	$r_7 = 0.907 \pm 0.001$	$t_4 = 0.100 \pm 0.002$	Si
	$r_8 = 1.289 \pm 0.002$	$d_4 = 0.200 \pm 0.030$	Air
L_5	$r_9 = \infty$	$t_5 = 0.040 \pm 0.005$	SA
	$r_{10} = \infty$		

given the equivalent focal length f' as equal to 1.43 and r_1, r_2, r_3, r_4, r_5, r_6, r_7, r_8 being positive.

4,380,364

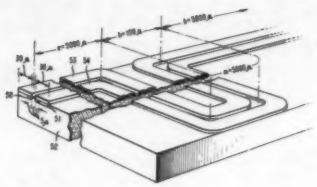
VELOCITY MISMATCHED GATE

Enrique A. J. Marcatili, Rumson, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 4, 1980, Ser. No. 174,831

Int. Cl.³ G02B 5/14

U.S. Cl. 350—96.14 **8 Claims**



1. In combination:

a pair of coupled wavepaths (61, 62) and;

traveling wave means (63) for producing a standing wave for locally modulating the difference in the phase constants of said coupled wavepaths (61, 62);

characterized in that

said traveling wave means (63) is disposed along said coupled wavepaths so as to have first, longitudinally disposed regions (a, b, c . . .) which interact with said coupled wavepaths, separated by second, longitudinally disposed regions (m, p . . .) along which there is no interaction with said coupled wavepaths.

4,380,365

OPTICAL FIBER, HAVING ON AT LEAST ONE OF ITS FRONTAL EXTREMITIES A PLANO-CONVEX MICROLENS JOINED WITH ITS PLANE FACE TO SAID FRONTAL EXTREMITY

Daniel Gross, Carouge, Switzerland, assignor to Battelle Memorial Institute, Carouge, Switzerland

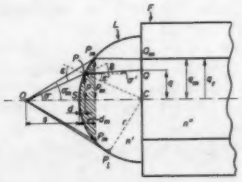
PCT No. PCT/CH79/00074, § 371 Date Jan. 23, 1980, § 102(e) Date Jan. 17, 1980, PCT Pub. No. WO79/01106, PCT Pub. Date Dec. 13, 1979

PCT Filed May 23, 1979, Ser. No. 193,529

Claims priority, application Switzerland, May 23, 1978, 5574/78

Int. Cl.³ G02B 5/172

U.S. Cl. 350—96.18 **7 Claims**



1. In combination, a virtual point source of divergent rays

and an optical fiber having an extremity confronting said source for irradiation thereby, said fiber having an axis in line with said source and an end face at said extremity perpendicular to said axis adjoining a flat side of a plano-convex microlens of transparent thermoplastic material with a spherically curved outer surface, said fiber having a core whose cross-sectional area at said end face is completely overlaid by said flat side of said microlens,

said microlens having an apex on said axis separated from said source by a distance s related to the radius of curvature r of said outer surface by a ratio s/r approximately corresponding to the geometric mean of a first limiting value $(s/r)_p = 1/(n'-1)$ and a second limiting value $(s/r)_f = 1/\{\cos[\arcsin(1/n')]-1\}$, n' being the refractive index of said thermoplastic material and being at least equal to the refractive index of said core.

4,380,366

DETACHABLE CONNECTOR FOR OPTICAL FIBRES

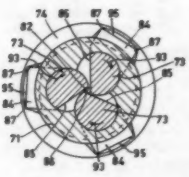
Adrianus J. J. Franken; Franciscus M. Coolen; Giok D. Khoe; Jacob Langerhorst, and Henricus W. W. Smulders, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 4, 1979, Ser. No. 35,979

Claims priority, application Netherlands, May 5, 1978, 7804825

Int. Cl.³ G02B 7/26

U.S. Cl. 350—96.21 **13 Claims**



12. A connector for coupling optical fibers comprising two connector portions, each connector portion comprising:

a housing, with means for detachably connecting the housing to another housing, said housing having an inner wall, a central axis and a reference face oriented perpendicular to the central axis, said reference face contacting the reference face of another housing when the connector portions are connected, said housing also having an edge having a toothed profile for engaging a toothed edge of another housing when the connector portions are connected, each of the toothed edges having faces along which the housings contact each other, said faces being along lines which radiate from the central axis, the central axes of the connected housings being coaxial; and

centering means, arranged in the housing, for disengageably centering a fiber end with respect to a fiber end in the other connector portion, said centering means comprising at least one centering element having a first side arranged to abut against at least one side of the fiber end and having a second side arranged to abut against the inner wall of the housing;

characterized in that;

the inner wall of the housing has as many symmetry planes as there are centering elements, the central axis being situated in each symmetry plane;

the toothed edge is arranged to be resilient with respect to the reference face in a direction parallel to the central axis; and

the centering means further comprises:

a holder having three circular-cylindrical recesses each having a radius of a first length and each having an axis of a second length, the axes of the recesses being parallel to the central axis and equidistant therefrom, the distance between the axes of the recesses and the central axis being a small amount less than the radii of the recesses; and

three substantially circular-cylindrical centering elements, one centering element provided in each recess, each centering element having a flat side disposed toward the central axis, the centering elements forming a channel having a triangular cross-section around the central axis.

4,380,367

COATING MATERIAL FOR OPTICAL COMMUNICATION GLASS FIBERS

Toshio Suzuki, Ichihara, Japan, assignor to Toray Silicone Co., Ltd., Tokyo, Japan

PCT No. PCT/JP80/00050, § 371 Date Nov. 3, 1980, § 102(e) Date Nov. 3, 1980, PCT Pub. No. WO80/02078, PCT Pub. Date Oct. 2, 1980

PCT Filed Mar. 28, 1980, Ser. No. 212,712

Claims priority, application Japan, Mar. 28, 1979, 54-37259

Int. Cl.³ G02B 5/14

U.S. Cl. 350—96.34 **6 Claims**

1. A coating material for optical communication glass fibers, comprising the following components (a), (b) and (c):

(a) a vinyl group terminated methylphenylpolysiloxane having a viscosity at 25° C. of 100 to 15,000 cP and with a methyl/phenyl molar ratio in the range of 1/1 to 10/1, the amount of the component (a) being 100 parts by weight,

(b) at least one organohydrogenpolysiloxane selected from the group consisting of a methylhydrogenpolysiloxane having a viscosity at 25° C. of 0.7 to 5,000 cP and containing at least three silicon atom bonded hydrogen atoms in one molecule, and a methylphenylhydrogenpolysiloxane having a viscosity at 25° C. of 0.7 to 5,000 cP, containing at least three silicon atom bonded hydrogen atoms in one molecule and with a meth,l/phenyl molar ratio not smaller than 1/1, the amount of the component (b) being an amount by weight required to provide a molar ratio of the silicon atom bonded hydrogen atoms in the component (b) to the silicon atom bonded vinyl groups in the component (a) of 0.8/1 to 10/1, and

(c) platinum or a platinum compound, the amount by weight of the component (c) being 0.5 to 1,000 ppm in terms of platinum metal based on the total amount of the components (a) and (b).

4,380,368

PROJECTION SCREEN

Ken Ohmata, 69-15, Minami Iwakuni-cho 2-chome, Iwakuni-shi, Yamaguchi-ken; Hideya Aoki, Mitsui Sekiyu Kagaku Yushu Nishi Shataku C18-102, 5, Yushudai Nishi 2-chome, Ichihara-shi, Chiba-ken, and Naoyuki Tamura, 3-27, Misono-cho 1-chome, Otake-shi, Hiroshima-ken, all of Japan

Filed Aug. 20, 1980, Ser. No. 179,645

Claims priority, application Japan, Aug. 21, 1979, 54/106861

Int. Cl.³ G03B 21/60

U.S. Cl. 350—117 **12 Claims**

1. A projection screen having a surface formed by a metal

plate member having a plurality of raised ridges which are substantially unidirectional with a ridge density of about 10^3 to 10^9 ridges per cm^2, said ridges each being formed by two side surfaces sloping towards one another and having a maximum width of about 0.5 to 50 microns; said ridges each having a length of approximately 100 microns or less, said projection screen further including a plurality of surface irregularities formed by crater patterns; said projection screen further including an outer coating of the oxide of the metal forming the plate member.

4,380,369

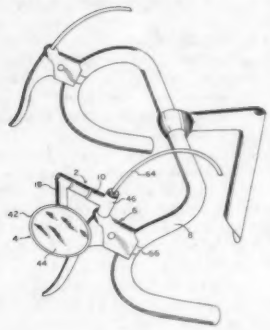
ADJUSTABLE SUPPORT SYSTEM FOR CYCLE MIRROR

Barry M. Schacht, Boulder, Colo., assignor to Mirrycle Corporation, Boulder, Colo.

Continuation-in-part of Ser. No. 95,480, Nov. 19, 1979, abandoned, Ser. No. 120,975, Feb. 13, 1980, abandoned, and Ser. No. 120,977, Feb. 13, 1980, abandoned. This application Jan. 8, 1981, Ser. No. 223,412

Int. Cl.³ G02B 7/18

U.S. Cl. 350—307 **17 Claims**



1. An adjustable support system for a cycle mirror which support system is designed for mounting on a standard cycle brake lever bracket assembly in a manner which will not interfer with the use or operation of said brake lever bracket assembly, wherein said brake lever bracket assembly defines at least one through hole and includes a lever bracket, a lever, and a lever pivot wherein the improvement comprises:

a base member having a first and a second end, wherein substantially adjacent said first end is included means designed for mechanical attachment or abutment of said base member at at least one of said through holes defined by said standard brake lever bracket assembly;

an arm, said arm having a first and second end said first end of said arm pivotally secured to said base substantially adjacent to said second end of said base and at an angle to said base, and

a mounting member for supporting a mirror, said mounting member pivotally connected substantially adjacent to said second end of said arm; whereby such attachment or abutment of said support system to said standard brake lever bracket assembly is in a manner which will not interfer with the use or operation of said brake lever bracket assembly, and whereby further, by adjustment of said base member, said arm and said mounting member for supporting a mirror can be adjusted to substantially any direction of rear view and then retained in that direction with a substantial amount of stability.

4,380,370

OUTSIDE REAR VIEW MIRROR FOR MOTOR VEHICLES

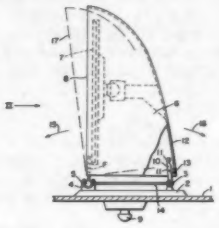
Bernhard Mittelhäuser, No. 57, D-3002 Wedemark 2, Fed. Rep. of Germany

Filed May 6, 1981, Ser. No. 261,052

Claims priority, application Fed. Rep. of Germany, May 6, 1980, 3017228

Int. Cl.³ G02B 7/18

U.S. Cl. 350—307 **5 Claims**



1. An external rear view mirror for motor vehicles, comprising:

a mounting support connected to said vehicle;

a housing open on one side;

a mirror body arranged in said housing;

a rotating shaft interposed between said mounting support and said housing, said housing being connected with said mounting support by said rotating shaft in such a way that said housing is pivotable about two essentially vertical axes arranged one behind the other when viewed in the longitudinal direction of said vehicle; and

at least two arresting means for releasably holding said housing, said arresting means being respectively located at different distances from said mounting support.

4,380,371

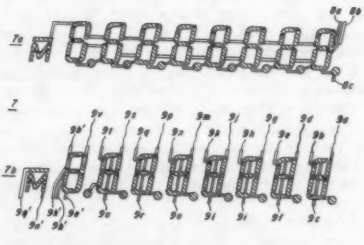
LIQUID CRYSTAL DISPLAY DEVICE

Gene A. Frantz, Irving, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 799,808, May 23, 1977, abandoned. This application Mar. 17, 1980, Ser. No. 130,780

Int. Cl.³ G02F 1/13

U.S. Cl. 350—336 **4 Claims**



1. A liquid crystal display device comprising:

first and second substrates;

liquid crystal material sealed between the subtrates;

a plurality of segment electrodes disposed on a major surface of the first substrate;

a plurality of segment electrodes disposed on a major surface of the second substrate in registration with the segment electrodes on the first substrate;

the segment electrodes being arranged to provide a row of

eight selectively displayable characters including an end character and seven other characters, each character being defined by a pattern of at least seven segment electrodes on each substrate disposed in separately actuable electrode pairs, each seven-segment character pattern being arranged in a figure-eight configuration;

the segment electrodes on the first substrate which define the seven other characters being devided into first, second, and third groups, each group including from one to three segment electrodes per character, each group being restricted to segment electrodes in the same relative positions of each figure-eight configuration;

a first drive conductor interconnecting the segment electrodes of the first group;

a second drive conductor interconnecting the segment electrodes of the second group;

a third drive conductor interconnecting the segment electrodes of the third group;

the segment electrodes on the second substrate which define the seven other characters being divided into first, second and third sets, each set including from one to three segment electrodes per character, each set being restricted to segment electrodes in the same relative positions of each figure-eight configuration;

a plurality of segment conductors including first, second, and third segment conductors per character respectively connected at each character to the segment electrodes of the first, second and third sets, thereby providing twenty-one segment conductors connected to twenty-one separate subsets of segment electrodes on the second substrate;

each of the segment electrodes on the first substrate which define the end character being connected to one of the drive conductors;

the plurality of segment conductors further including at least three additional segment conductors each of which is connected to at least one of the segment electrodes on the second substrate which define the end character, one or more of the three additional segment conductors being connected in common with one or more of the twenty-one segment conductors of the seven other characters;

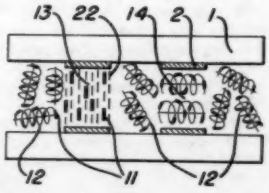
such that the total number of electrically separate segment conductors plus the number of drive conductors is less than or equal to twenty-six, and the segment conductors and drive conductors are connected to the segment electrodes of the eight characters in such manner that each segment electrode pair is actuable by a unique combination of one of the drive conductors and one of the segment conductors.

4,380,372

PHASE TRANSITION MODE LIQUID CRYSTAL DISPLAY DEVICE

Masaaki Taguchi, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan

Filed Aug. 20, 1980, Ser. No. 179,815
Int. Cl.³ G02F 1/13
U.S. Cl. 350—346 **26 Claims**



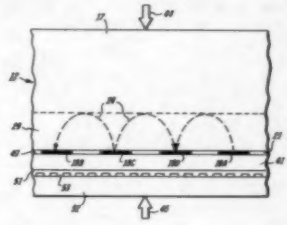
15. A phase transition mode liquid crystal display device comprising: a liquid crystal mixture comprised of a nematic liquid crystal mixed with at least one of a cholesteric liquid crystal and a chiral nematic liquid crystal, the liquid crystal mixture having a thermally established psuedo-focal-conic state in which the liquid crystal mixture exhibits in the absence of an electric field a light-scattering characteristic effective for use as the display background; and means including electrodes arranged to define a pattern of picture elements against the display background and coacting with the liquid crystal mixture for selectively applying electric fields to the liquid crystal mixture to display selected picture elements, said means comprising means for applying a relatively strong electric field to the liquid crystal mixture in the regions of selected picture elements to transform the selected picture element regions to a homeotropic light-transmitting state and for applying a relatively weak electric field to the liquid crystal mixture in the regions of non-selected picture elements to transform the non-selected picture element regions to a focal-conic light-scattering state; whereby the light-scattering states of the display background and the non-selected picture element regions exhibit a generally similar appearance which contrasts with that of the light-transmitting state of the selected picture element regions.

4,380,373

CONFORMABLE PROXIMITY COUPLED ELECTRO-OPTIC DEVICES

Robert A. Sprague, Saratoga, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 6, 1980, Ser. No. 194,525
Int. Cl.³ G02F 1/03
U.S. Cl. 350—356 **8 Claims**



1. In an electro-optic device including
an electro-optic element,
a flexible member, and
a plurality of electrodes supported in spaced apart relationship on said flexible member, said electrodes facing a surface of said electro-optic element and being intimately coupled thereto to proximity couple electric fields into said electro-optic element;
the improvement comprising
a rigid base plate, and
resilient means compressed between said flexible member and said base plate for applying a distributed bias to said flexible member, said bias urging said flexible member toward said surface, thereby causing said electrodes to generally conform to said surface.

4,380,374

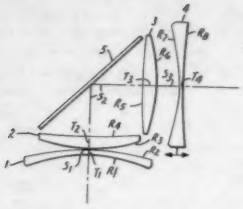
VARIABLE FOCAL LENGTH PROJECTION LENS FOR USE ON OVERHEAD PROJECTORS

Dennis F. Vanderwerf, Cottage Grove, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Apr. 16, 1981, Ser. No. 254,947
Int. Cl.³ G02B 9/58, 15/14
U.S. Cl. 350—423 **4 Claims**

1. A lens assembly for use in an overhead projector having a variable focal length to afford changes in magnification with fixed object-to-image distances as between the stage and the

screen, said lens assembly comprising a first negative meniscus lens airspaced from a positive meniscus lens which is airspaced from a second positive double convex lens which is airspaced from a movable lens element which is a negative double con-



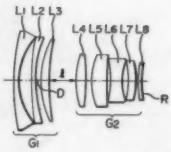
cave lens affording a range of movement to change the focal length between about 276 mm to 356 mm and afford a change in the magnification by a factor of between 1.4× and 1.5×, and a mirror positioned between said positive lenses to fold the light path.

4,380,375

WIDE ANGLE ZOOM LENS OF TWO-GROUP CONSTRUCTION

Satoshi Mogami, Kodaira, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

Filed May 27, 1980, Ser. No. 153,788
Claims priority, application Japan, Jun. 8, 1979, 54-71112
Int. Cl.³ G02B *15/14*
U.S. Cl. 350—426 **4 Claims**



1. In a wide angle zoom lens system which comprises, in succession from the object side, a divergent lens group and a convergent lens group and in which magnification change is effected by relative movement of said two groups and the absolute value of the focal length of said divergent lens group is greater than 1.12 times the longest total focal length of the entire system, the improvement residing in

that said divergent lens group includes, in succession from the object side, at least two negative meniscus lenses having their convex surfaces facing the object side and only one positive meniscus lens having its convex surface facing the object side, and

that said lens system satisfies the following conditions:

$$\frac{D}{|f_1|} < 0.1 \quad \text{(I)}$$

$$0 < \frac{1}{R} < \frac{2.5}{|f_1|} \quad \text{(II)}$$

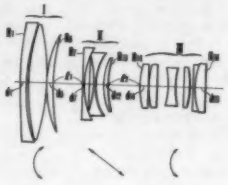
where D is the air space between said positive meniscus lens and the negative meniscus lens immediately before said positive meniscus lens, f_1 is the focal length of said divergent lens group, and R is the curvature radius of the surface of said convergent lens group which is most adjacent to the image side.

4,380,376

ZOOM OBJECTIVE

Shigeyuki Suda, Ohashi, and Kazuo Tanaka, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 16, 1980, Ser. No. 159,492
Claims priority, application Japan, Jun. 18, 1979, 54-76528
Int. Cl.³ G02B *15/18*
U.S. Cl. 350—427 **3 Claims**



1. A zoom objective comprising:

a first lens group, a second lens group and a third lens group arranged in the order mentioned from an objective end to an image end;

said first lens group having a positive refractive power and being axially movable forward and then rearward when zooming from a wide angle to a telephoto setting;

said second lens group having a negative refractive power and being axially movable from the objective end to the image end when zooming from the wide angle to the telephoto setting; and

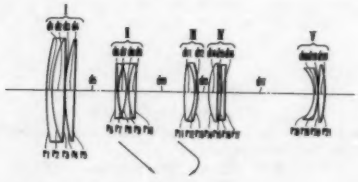
said third lens group having a positive refractive power and being axially movable forward and then rearward when zooming from the wide angle to the telephoto setting.

4,380,377

COMPACT ZOOM LENS

Yasuhisa Sato, Kawasaki, and Sadahiko Tsuji, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 16, 1980, Ser. No. 187,707
Claims priority, application Japan, Sep. 17, 1979, 54-119053
Int. Cl.³ G02B *9/64, 15/18*
U.S. Cl. 350—427 **2 Claims**



1. A compact zoom lens comprising:

a first group having a positive refractive power, including a cemented positive lens of a negative lens and a positive lens, and a positive lens, and movable for focusing;

a second group having a negative refractive power, comprising a negative lens and a cemented negative lens of a negative lens and a positive lens, and movable for variation of magnification;

a third group having a positive refractive power, comprising a cemented positive lens of a positive lens and a negative lens, and movable for compensation along with the second group; and

an image forming lens having a positive refractive power, positioned to the rear of the third group on an optical axis, and consisting of fourth and fifth groups,

said fourth group including, from front to rear, at least one positive lens with its front surface covex toward the front, and a negative lens; and

said fifth group consisting of, from front to rear, a negative meniscus lens of rearward convexity, and a positive lens, said zoom lens satisfying the following conditions:

$$0.7<\phi 4,5/\phi 4<0.85 \quad (1)$$

$$1.5<\phi 4s/\phi 4,5<2.2 \quad (2)$$

$$N4n>N4p \quad (3)$$

$$1.76<N5n<1.85 \quad (4)$$

$$30<\nu 5p<45 \quad (5)$$

where

$\phi 4$ is the refractive power of said fourth group;

$\phi 4,5$ is the overall refractive power of said fourth and fifth groups;

$\phi 4s$ is the refractive power of the first surface of the positive lens of said fourth group;

N4p is the refractive index of the positive lens in said fourth group (when the positive lens is plural in number, the average value thereof);

N4n is the refractive index of the negative lens in said fourth group;

N5n is the refractive index of the negative lens in said fifth group; and

$\nu 5p$ is the Abbe number of the positive lens of said fifth group.

4,380,378

CONTROL MECHANISM FOR A ZOOM LENS

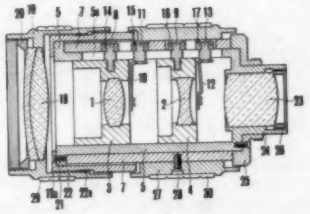
Tetsuo Tamura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 20, 1980, Ser. No. 151,757

Claims priority, application Japan, Jun. 13, 1979, 54-74314

Int. Cl.³ G02B 7/10

U.S. Cl. 350—429 **8 Claims**



1. A control system for a zoom lens comprising:

(a) a cam member fitted on a tubular body having defined therein a linear guide slot and arranged to be rotatable about an optical axis of said lens by actuation from outside of said lens, said cam member having a first camming slot for providing a primary camming surface and a second camming slot for providing a supplementary camming surface;

(b) lens holding means for containing a lens component which contributes to effect the functions of change of focal length and image shift compensation of said zoom lens, said lens holding means having engagement means extending through said linear guide slot to said first camming slot; and

(c) resilient means fixed to said lens holding means and having an engaging member extending through said linear guide slot of said tubular body and engaging with said supplementary camming surface to exert a spring force acting between said lens holding means and said supplementary camming surface through said engagement member to continuously urge said engagement means against said primary camming surface.

4,380,379

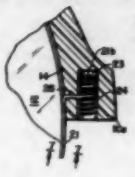
OPTOMETRIC DEVICE

John Abera, Barrington; Wayne Farmer, Lincoln, both of R.I.; David Hawes, Fairhaven, and Herbert J. McEvoy, Jr., North Attleboro, both of Mass., assignors to Fairfield Optical Company, Inc., Mansfield, Mass.

Filed Aug. 25, 1980, Ser. No. 181,452

Int. Cl.³ G02C 1/04, 5/00

U.S. Cl. 351—106 **10 Claims**



1. An optometric device comprising:

a semi-rimless plastic two lens frame having two rim surfaces;

two lenses for mounting in the frame each having a circumferential groove therearound; and

means for mounting the lenses in the frame comprising for each lens means forming a rib projecting from the rim surface and integral therewith and configured to engage with a portion of the lens groove to axially fix the lens and means connected to the frame for releasably engaging a remaining portion of the groove of the lens to radially fix the lens, wherein the releasably engaging means comprises a flexible line, means connecting the line is extendable along a portion of the remaining lens groove and receivable therein and winding means mounting in the frame and connected to the other end of the line for maintaining the line in a taut state, the winding means comprising means forming an unthreaded bore in the frame and a threaded rod having means disposed at one end for engaging said other end of the line and configured to tightly fit in the bore when the line is wrapped in the threads thereof and having means disposed at the other end effecting the turning thereof to simultaneously wrap the line thereareound and insert the rod in the bore until the line is taut.

4,380,380

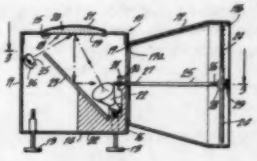
EPISCOPIC PROJECTOR

Frank G. Back, 5596 Soledad Mt. Rd., La Jolla, Calif. 92037

Filed Jun. 11, 1981, Ser. No. 272,506

Int. Cl.³ G03B 21/06

U.S. Cl. 353—66 **9 Claims**



1. An episcopic projector comprising an opaque hollow lamp housing having a top member, a bottom, a front, a back and opposed sides, a window in the top member, a field flattening lens in the top member window to receive an image source thereon, an opening in the front of the lamp housing, a lens housing having a rear and a front opening secured to the lamp housing with the opening at the rear of said housing in communication with the interior of the lamp housing, a light source carried within the lamp housing and directed at the field flattening lens, a Fresnel lens carried in the lens housing front opening to receive light reflected from the image source

through the field flattening lens, an angularlary disposed mirror in the light path between the said lens and the Fresnel lens to receive the reflected light and direct it through the Fresnel lens and means to move the Fresnel lens along the optical axis of the projector to focus the Fresnel lens.

4,380,381

CAMERA WITH MOTOR DRIVEN WINDING-UP DEVICE

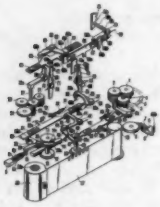
Nobuo Tezuka, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 5, 1981, Ser. No. 318,584

Claims priority, application Japan, Nov. 7, 1980, 55-156847; Nov. 7, 1980, 55-156849; Nov. 7, 1980, 55-156850; Nov. 7, 1980, 55-156851

Int. Cl.³ G03B *17/38, 17/42*

U.S. Cl. 354—173 **10 Claims**



1. A motor driven winding-up device for a camera with a shutter including:

(a) an electric motor;

(b) a spool arranged to be driven by said motor for winding up film in the camera;

(c) clutch means for transmitting driving torque of said motor to said spool so that said spool is driven to rotate when said clutch means is actuated, said clutch means being placed in a non-actuated state when a film is wound up by a length of one frame;

(d) switching means for controlling a supply of current to said motor when said switching means is actuated, said switching means being placed in a non-actuated state corresponding to completion of energizing the shutter;

(e) an actuating member for selectively actuating said clutch means and said switching means by shifting in a prescribed direction; and

(f) a latch member engageable with said actuating member, and arranged to be disengaged from said actuating member when operation of the shutter is completed, for initiating shifting of said actuating member.

4,380,382

FILM CASSETTE FOR A PHOTOSENSITIVE FILM STRIP

Dieter Engelsmann, Unterhaching; Franz Hoffacker, Langenfeld; Guido Kovacic, Unkel; Peter Lermann, Naring; Hermann Lührig, Leverkusen, and Karl Wagner, Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

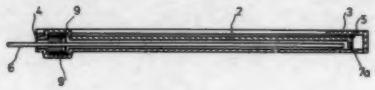
Filed Jun. 17, 1981, Ser. No. 274,555

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1980, 3023819

Int. Cl.³ G03B *17/26*

U.S. Cl. 354—275 **7 Claims**

1. A film cassette for a photosensitive film strip suitable for taking several pictures, consisting of a light-proof, flat flexible case substantially equal in length to the strip of film and a cassette opening which extends perpendicularly of the length of the case and which is provided with light-sealing means, characterised in that the case comprises a top part and a bottom part, the top part and the bottom part being fixedly interconnected solely in the vicinity of the cassette opening and the top part being surrounded by the bottom part and arranged for displacement therein in such a way that light-proof labyrinths are formed at the three edges of the bottom part and top part which are displaceable relative to one another and, even if the case is bent, the strip of film retains its freedom of movement.



4,380,383

COPYING METHOD AND APPARATUS

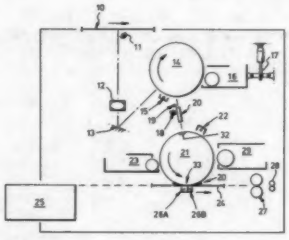
Joseph W. Daintrey, London; John Rushton, Wickford, and Michael Willis, London, all of England, assignors to Gestetner Manufacturing Limited, London, England

Filed Nov. 14, 1980, Ser. No. 206,904

Claims priority, application United Kingdom, Nov. 16, 1979, 7939698

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 R **19 Claims**



1. A copying system comprising in combination a first, memory, photoconductive surface, means to form and develop an electrostatic image of an original on said first, memory, photoconductive surface, a second photoconductive surface, positioned adjacent said first photoconductive surface means repeatedly forming on said second photoconductive surface second electrostatic images of the developed image on the first surface by illumination of the first surface, said second electrostatic images being identical with each other and corresponding to the first electrostatic image, means to transfer the second images from the second surface to copy material, and means to develop said second images.

4,380,384

CHARGING DEVICE FOR ELECTRONIC COPIER

Tsuyoshi Ueno, Fujisawa, and Hideo Mukai, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 23, 1981, Ser. No. 227,779

Claims priority, application Japan, Jan. 25, 1980, 55-7511; Jan. 25, 1980, 55-7512; Jan. 25, 1980, 55-7513; Jan. 25, 1980, 55-7824[U]; Jan. 25, 1980, 55-7825[U]

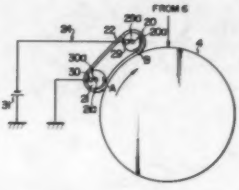
Int. Cl.³ G03G *15/02*

U.S. Cl. 355—3 CH **9 Claims**

4. An electronic copier comprising:

(a) a photosensitive medium;

(b) endless charging belt means, provided in contact with said photosensitive medium and having a characteristic resistance ranging from about 10^4 to about 10^{10} Ω.cm, for charging said photosensitive medium;
(c) drive mechanism means for driving said charging belt at a peripheral speed different from that of said photosensitive medium;
(d) power supply means for applying a voltage to said charging belt means such as to produce a potential gradient therein;



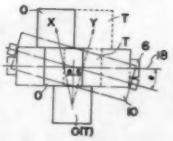
(e) exposure device means for forming an electrostatic latent image on said photosensitive medium;
(f) developing device means for developing the electrostatic latent image formed on said photosensitive medium to obtain a visible image;
(g) transfer device means for transferring the visible image formed on said photosensitive medium onto a recording sheet; and
(h) fixing device means for fixing the visible image transferred onto said recording sheet.

4,380,385

METHOD OF TRANSFERRING TONER POWDER IMAGE BY PRESSURE AND APPARATUS THEREFOR

Yoshihiro Ozaki, Isehara; Shuichiro Kaneko, Mitaka; Masayuki Kuniyoshi, Sagamihara; Shoji Kondo, Tokyo, and Yasukuni Omata, Hachioji, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 27, 1981, Ser. No. 228,806
Claims priority, application Japan, Feb. 18, 1980, 55-18875
Int. Cl.³ G03G *15/16*
U.S. Cl. 355—3 TR **8 Claims**



1. A method of transferring a toner powder image formed on a rotatable drum to an image receiving member by pressure, which comprises pressing a pressure roller against said rotatable drum under a pressure of at least about 20 kg/cm² and disposing said pressure roller to intersect its rotating axis with the rotating axis of said drum at an angle of about 0.5° to 2° for producing sliding between said rotatable drum and said image receiving member as said image receiving member is transported between said drum and said pressure roller.

4,380,386

METHOD FOR CONTROLLING PREFATIGUING ILLUMINATION OF A PHOTOSENSITIVE MEMBER

Kazuo Yasuda; Akihiko Tamura, and Yoshimitsu Nakamura, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Hino, Japan

Filed Jul. 16, 1981, Ser. No. 283,811
Claims priority, application Japan, Jul. 29, 1980, 55-104025
Int. Cl.³ G03G *21/00*
U.S. Cl. 355—3 R **4 Claims**

1. In a copying machine which includes a photosensitive member for receiving a latent image in the course of a copying operation during which a reproduction is produced by the machine, and an auxiliary light source operable to illuminate the photosensitive member and thereby prefatigue the member prior to a copying operation during which a latent image is received thereon, the improvement comprising a method of controlling the operation of the auxiliary light source, comprising:

measuring the time interval between the completion of each copying operation and initiation of the next succeeding copying operation; and

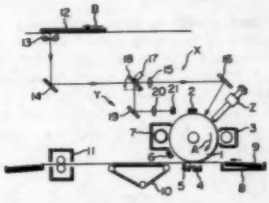
controlling the operation of the auxiliary light source at the initiation of each copying operation in accordance with the latest measured time interval such that the amount of prefatiguing illumination on the photosensitive member is varied in substantially direct relation to the length of the measured time interval, whereby the photosensitive member is appropriately prefatigued in accordance with the measured time interval between successive copying operations.

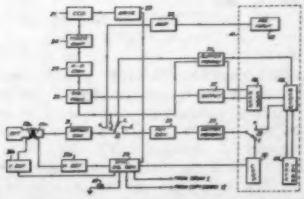
4,380,387

COMPOSITE INPORMATION RECORDING APPARATUS

Tatsuo Yajima, Hino, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 50,616, Jun. 21, 1979, abandoned. This application Oct. 19, 1981, Ser. No. 312,709
Claims priority, application Japan, Jun. 26, 1978, 53-77258
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 R **4 Claims**





1. A composite information recording apparatus having an optical system for projecting an image of an original supported on a copy board onto a light sensitive medium, means for reproducing an electrical information signal as an electrostatic latent image on said medium, and means for producing a visible recording by developing either image on the light sensitive

medium, the improvement comprising a second optical system, an optical switching mirror for transferring the image on said copy board to said second optical system, a photoelectric converter located at the imaging portion of said second optical system, external signal transmitting apparatus, and means switching the input of said signal reproducing means to the output of photoelectric converter or to the output of said external signal transmitting apparatus.

4,380,388

CYCLIC ELECTROPHOTOGRAPHIC COPYING PROCESS

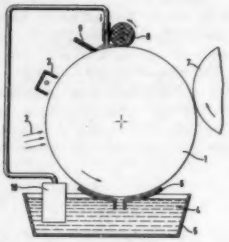
Roland Moraw, and Günther Schädlich, both of Wiesbaden, Fed. Rep. of Germany, assignors to Kalle, Niederlassung der Hoechst AG, Wiesbaden, Fed. Rep. of Germany

Filed Dec. 17, 1980, Ser. No. 217,423

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1979, 2950769

Int. Cl.³ G03G *21/00*

U.S. Cl. 355—15 **16 Claims**



1. An electrophotographic copying process comprising the steps of:

performing a cleaning operation on a recording element by carrying out at least one rinsing operation of the element utilizing a first quantity of a developer liquid;

performing a series of copying cycles comprising charging, exposing, developing with a liquid developer, transferring and fixing; and

after at least one copying cycle, performing additional cleaning operations by rinsing the element with a second quantity of developer liquid which is between "0" and "a" wherein "a" is an amount less than said first quantity and "0" means a completely omitted rinsing of developer liquid; the supply of developer liquid for rinsing said element being at least partially interrupted during said series of copying cycles.

4,380,389

DOCUMENT TRANSPORT FOR RASTER SCANNERS

William Kingsley, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Calif.

Filed Jul. 27, 1981, Ser. No. 286,726

Int. Cl.³ G03B *27/48, 27/50*

U.S. Cl. 355—50 **3 Claims**

1. In a raster input scanner having at least one array for scanning documents line by line, the combination of;

(a) means forming a surface for supporting a document to be scanned, said surface forming means having a slit-like scanning aperture therein through which said array scans said document, the longitudinal axis of said aperture being substantially parallel to the direction of scan by said array;

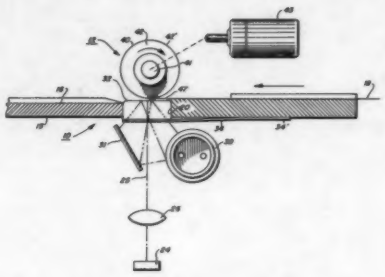
(b) transport means for moving a document to be scanned along said surface forming means and across said scanning aperture in a direction substantially perpendicular to the direction of scan by said array;

(c) means forming a transparent viewing window in said scanning aperture;

(d) said transport means including a document feed roll, the periphery of said feed roll cooperating with said viewing window to form a nip through which a document to be scanned passes;

(e) bias means for releasably biasing said viewing window and said document feed roll periphery into contact; and

(f) drive means for rotating said document feed roll to transport the document to be scanned along said surface form-



ing means and across said viewing window for scanning by said array, tangential contact of said document feed roll with said viewing window imparting constant velocity to said document while said bias means permits said nip to expand to accommodate passage of said document therethrough while minimizing velocity variations of said document as said document enters and leaves said nip.

4,380,390

EXPOSURE CORRECTING DEVICE

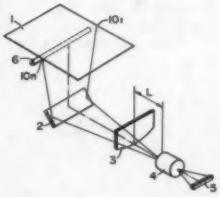
Masamichi Tateoka, Tokyo, and Kazuo Minoura, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 22, 1980, Ser. No. 199,505

Claims priority, application Japan, Oct. 29, 1979, 54-140044; Sep. 24, 1980, 55-133202

Int. Cl.³ G03B *27/72*

U.S. Cl. 355—71 **4 Claims**



1. An exposure correcting device comprising:

a light source for illuminating an original plane with light of longitudinally uniform intensity;

a lens for projecting a predetermined illuminated zone of said original plane onto a predetermined zone of an image plane; and

a light-shield plate having a surface contour defined by an arc of a circle of predetermined radius, said light-shield plate being disposed in a plane approximately perpendicular to the optical axis of said lens in such a manner that the center of the circle is positioned at a predetermined axial distance from said lens and at a predetermined perpendicular distance from the optical axis of said lens, to thereby produce a substantially uniform exposure on said image plane;

wherein said light-shield plate is positioned between said

original plane and said lens in such a manner that the radius R of said circle, the axial distance L of the center of said circle from the front face of said lens and the perpendicular distance H of said center from the optical axis are selected so as to satisfy the following relations represented in centimeters:

$$\frac{13.5}{32}L^2 - \frac{1}{5.3} < H < \frac{29}{32}L^2 - \frac{1}{5.3}$$

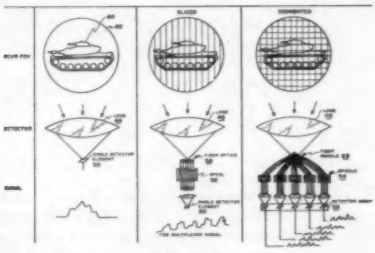
and $H-R<0.2$.

4,380,391

SHORT PULSE CO_2 LASER FOR RANGING AND TARGET IDENTIFICATION

Rudolph G. Buser, Wall, N.J.; Robert S. Rohde, Springfield, and Neal T. Nomiyama, Reston, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 30, 1980, Ser. No. 192,275
Int. Cl.³ G01C 3/08; G02B 5/14; H01S 3/00; G06K 9/00
U.S. Cl. 356—5 10 Claims



1. A high precision pulsed CO_2 laser rangefinder and target identifier device comprised of:

a linearly polarized CO_2 TEA laser triggered by firing logic to produce a train of laser beam gain switched spikes therefrom;

an electrooptics Pockels Cell modulator in optical alignment with said train of laser beam gain switched spikes;

means for activating said electrooptics Pockels Cell modulator in synchronism with each spike of said train of laser beam gain switched spikes to chop each of said spikes into a train of short evenly spaced linearly polarized laser pulses at the output therefrom;

a circularly polarizing quarter wave plate in optical alignment with the output of said electrooptics Pockels Cell modulator for transforming said train of linearly polarized laser pulses into a train of circularly polarized laser pulses;

common transmitter and receiver optics means for transmitting said train of circularly polarized laser pulses therefrom to a target scene and for receiving target return signals representing time broadened reflected signals that indicate the finite depth of the target and unique signature therethrough wherein said target return signals are converted back to linearly polarized light pulses by passing back through said quarter wave plate;

a wide bandwidth receiving means that is range gated by said firing logic in synchronism with the triggering of said linearly polarized CO_2 TEA laser, said receiving means receiving said target return signals resolving into range resolved cross sections to gather target signatures from different zones in the target plane and signal processing said target signatures; and

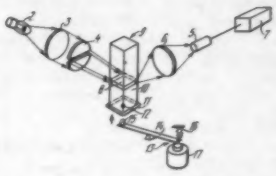
a pattern recognition means having known target signatures stored therein for comparison with target signatures obtained from said target return signals to identify the target being pulsed by said train of circularly polarized laser pulses.

4,380,392

METHOD AND APPARATUS FOR CALIBRATION OF INSTRUMENTS SERVING TO COUNT AND TO DETERMINE THE SIZE OF PARTICLES SUSPENDED IN DISPERSION MEDIUM

Mikhail A. Karabegov, ulitsa Mardzhanishvili, 35; Aram G. Ovanesian, ulitsa Sundukiana, 22; Eduard A. Mesropian, prospekt Plekhanova, 151; Georgy T. Metreveli, Gldansky massiv, 7 mikroraion, 10 korpus, kv. 153; Anatoly A. Karpeev, Kakhetinskoeshosse, 38; Boris K. Khoshtaria, ulitsa Dudiani, 8, and Tatyana L. Gventsadze, ulitsa Kamo, 79/81, kv. 19, all of Tbilisi, U.S.S.R.

Filed Mar. 18, 1981, Ser. No. 245,122
Int. Cl.³ G01B 11/10
U.S. Cl. 356—243 11 Claims



1. A method for calibrating an optical sensing apparatus which counts particles suspended in a fluid by (i) passing said fluid through a measuring tube having a transparent portion, and (ii) passing a transverse plane of light through said transparent portion of said tube to impinge upon a photodetector, so that particles in said fluid intercept said light and vary the output of the photodetector, said method comprising the steps of:

providing a vertically oriented calibration tube having a transparent portion aligned with said light plane, said calibration tube having closed upper and lower ends and containing a certified particle; and

vibrating said lower end of said calibration tube to cause said particle to repetitively intercept said light plane at a predetermined frequency, to cause the output of said photodetector to vary in accordance therewith.

4,380,393

GRAZING INCIDENCE SPECTROMETER

Hiroshi Nagata, Tokyo; Kazuo Sano; Jiro Morimoto, both of Kawasaki, and Makoto Shiho, Tokaimura, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Mar. 26, 1981, Ser. No. 247,757
Claims priority, application Japan, Mar. 31, 1980, 55-40295
Int. Cl.³ G01J 3/38
U.S. Cl. 356—328 6 Claims

1. In a grazing incidence spectrometer provided with an

entrance slit and a diffraction grating for diffracting the light rays incident thereon from said entrance slit and for imaging said light rays as a plurality of spectral lines, the improvement residing in that

said diffraction grating is a curved diffraction grating having a predetermined principal radius of curvature and the groove patterns thereof are formed at unequal intervals so as to make the image plane thereof substantially planar,

said entrance slit is disposed on a line segment l at a position satisfying a relation:

$$0.7 \leqq r/R \cos \alpha \leqq 0.9,$$

where R is said principal radius, α is angle of incidence of the principal ray incident from said entrance slit onto said curved diffraction grating, l is the line segment connecting between the center of said curved diffraction grating and a point on a Rowland circle of the curved diffraction grating, said point being distant from the center of said curved diffraction grating by R cos α, and r is a distance on the line segment l between said entrance slit and the center of said curved diffraction grating,

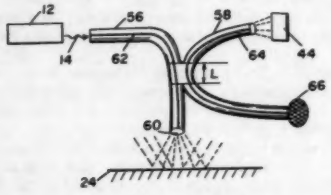
the ray incident through said entrance slit being diffracted by said curved diffraction grating and imaging on said image plane within said Rowland circle.

4,380,394

FIBER OPTIC INTERFEROMETER

David W. Stowe, Buffalo Grove, Ill., assignor to Gould Inc., Rolling Meadows, Ill.

Filed May 26, 1981, Ser. No. 266,773
Int. Cl.[3] G01B 9/02
U.S. Cl. 356—358 2 Claims



1. An inteferometer for measuring displacements of a surface to be measured, said interferometer comprising:

an optical energy source;

a first fiber optic waveguide having a finite length with a first end and a second end, light from said optical energy source entering said first end of said first fiber optic waveguide and being transported to said second end of said first fiber optic waveguide, said second end internally reflecting at least a portion of the light back towards said first end of said first fiber optic and projecting the remainder of said light; and

a second fiber optic waveguide having a finite length with a first end and a second end;

said first and said second fiber optic waveguide being in juxtaposition such that evanescent wave coupling occurs between their respective cores over a predetermined length;

said second end of said first fiber optic being in such spatial relationship with said surface to be measured that said projected light strikes said surface and reflects therefrom with at least a portion of said reflected light from said surface entering said second end of said first fiber optic and combining with said internally reflected light within said first fiber optic waveguide thus defining an optical information wave, said optical information wave being evanescently coupled to said second fiber optic waveguide such that said optical information wave is transported to said second end of said second fiber optic waveguide, and

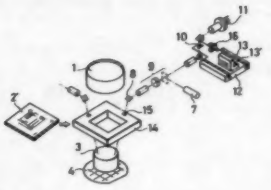
an optical energy absorber fixedly attached to said first end of said second fiber optic waveguide to prevent internal back reflection within said second fiber optic waveguide.

4,380,395

REDUCTION PROJECTION ALIGNER SYSTEM

Shinji Kuniyoshi, Tokyo; Akihiro Takanashi, and Toshiei Kurosaki, both of Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 23, 1980, Ser. No. 152,844
Claims priority, application Japan, Jun. 4, 1979, 54-69771
Int. Cl.[3] G01B 11/27
U.S. Cl. 356—401 5 Claims



1. In a reduction projection aligner system wherein a pattern on a reticle is formed directly on a wafer by reducing and projecting the pattern on the wafer through a reduction projection lens; the improvement comprising means to optically magnify and project and then focus a positioning pattern provided on the wafer onto a focal plane, means to scan the focal plane with a slit, an origin sensor provided with a mechanical origin on a body of said system for determining the initial position of said slit, means to measure the distance from the mechanical origin to said positioning pattern provided on said wafer on the basis of the extent of movement of said slit necessary to align said slit with said positioning pattern to thereby determine the position of said wafer relative to the body of said system, and means to relatively move and position the reticle so as to cause it to coincide with the position of said wafer on the basis of the measurement by said distance measuring means.

4,380,396

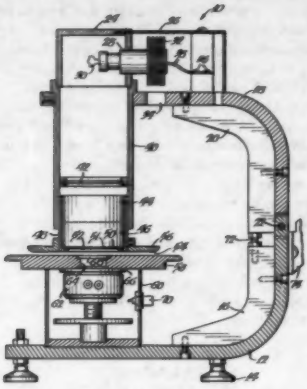
METHOD AND APPARATUS FOR MEASURING THE OPACITY OF SHEET MATERIAL

William A. Arndt; Wayne A. Damrau, and Donald J. Gunderson, all of Wisconsin Rapids, Wis., assignors to Consolidated Papers, Inc., Wisconsin Rapids, Wis.

Filed Dec. 29, 1980, Ser. No. 220,432
Int. Cl.[3] G01N 21/01
U.S. Cl. 356—432 4 Claims

1. A method of measuring the opacity of sheet material, such as a sheet of paper, comprising the steps of directing a beam of light onto an area of the material on one side thereof; sensing on an opposite side of the material the intensity of any light transmitted through the material; and generating an indication, in accordance with the sensed intensity of light, of the opacity of the area, wherein a plurality of measurements of the opacities of different areas of the sheet material are made, including

the further steps of counting the number of opacity measurements made; averaging the values of the measured opacities



and, upon occurrence of a selected count, generating an indication of the average opacity of the areas.

4,380,397

DUPLEX TYPE CONTINUOUS MIXER

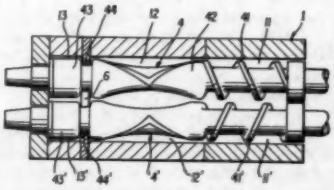
Shinji Hashizume, and Shinichi Fukumizu, both of Kobe, Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Filed Jan. 16, 1981, Ser. No. 225,774

Claims priority, application Japan, Jan. 16, 1980, 55-3827; Jan. 20, 1980, 55-10612[U]

Int. Cl.³ B28C 7/16

U.S. Cl. 366—77 **3 Claims**



1. A duplex type continuous mixer, comprising:

a casing having an inlet and an outlet at opposite ends thereof and defining a pair of parallel cavities extending between said inlet and outlet;

a pair of mixing shafts rotatably received in said cavities and each having a feed portion, a mixing portion, a discharge portion and an annular groove separating said mixing and discharge portions; and

a weir member projected upwardly from the bottom walls of said cavities at a position corresponding to said annular groove of said mixing shafts so as to prevent the short-passes of unmelted materials, wherein the cross sectional profile of the top surface of said weir member is identical to the cross-sectional profile of said bottom walls of said cavities.

4,380,398

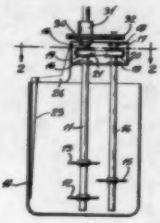
DISPERSION MIXER

Basil A. Burgess, 163 Bedbrook Ave., Montreal West, Quebec H4X 1R7, Canada

Filed Sep. 16, 1980, Ser. No. 187,709

Int. Cl.³ B01F 7/26

U.S. Cl. 366—261 **4 Claims**



1. A dispersion mixer for operating in a container the mixer comprising

a first rotor shaft extending downwards into the container at the container's approximate center,

a second rotor shaft, substantially parallel to the first rotor shaft, spaced from the first rotor shaft and extending downwards into the container,

at least one mixing rotor disc mounted on the first rotor shaft, and at least one mixing rotor disc mounted on the second rotor shaft,

first drive means including first motor means for rotating the first rotor shaft about its own axis, and the second rotor shaft about its own axis, and

second drive means including second motor means independent of said first drive means for moving the second rotor shaft in a circumferential path about the first rotor shaft, the first rotor shaft rotating at substantially the same rotational speed as the second rotor shaft, and in the same direction whereby the first drive means rotates the rotor shafts at high speed to develop maximum shear and the second drive means orbits the second rotor shaft about the first rotor shaft at a low speed.

4,380,399

MIXER FOR HOMOGENIZING A MIXTURE OF PRODUCTS CONTAINED IN A VESSEL

Jean Godat, Olivet; Daniel Parmenon, Orleans la Source; Alain Krzywdziak, Saint Denis en Val, and Daniel Boudin, Orleans, all of France, assignors to Fonderie et Ateliers des Sablons, Orleans, France

Filed Dec. 31, 1980, Ser. No. 221,717

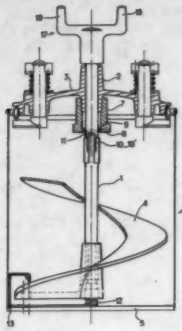
Claims priority, application France, Jan. 7, 1980, 80 00199; Dec. 9, 1980, 80 26095

Int. Cl.³ B01F 7/24

U.S. Cl. 366—289 **8 Claims**

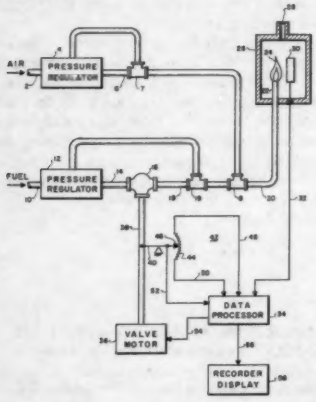
1. A mixer for homogenizing a mixture of products in a vessel having a detachable lid, comprising, a mixer shaft mounting a helical blade, having mounted at its base a scraping device for scraping the inside walls of the vessel comprising a spring exerting an essentially constant pressure on the bottom and side walls of the vessel, said helical blade being rotatively mounted at its top about a substantially vertical axis by a bearing disposed in the lid of the vessel, said mixer further comprising means for vertically moving said helical blade with a vibratory movement having a relatively small vertical amplitude, said moving means comprising a tubular coupling sleeve disposed in said bearing whose lower lip forms a notched crown

presenting a sinusoidal cam configuration bearing upon at least one stop integral with said shaft, said at least one stop being



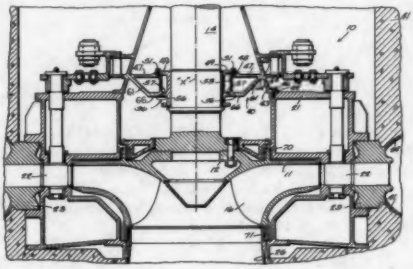
maintained in contact with said notched crown by said spring of the scraping device.

4,380,400
COMBUSTIBLE GAS ANALYZER
John L. Searle, Camden, N.J., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Mar. 17, 1981, Ser. No. 244,538
Int. Cl.³ G01N *25/22*
U.S. Cl. 374—37 **6 Claims**



1. A combustible gas analyzer comprising
first pressure control means for supplying combustion air at a predetermined flow rate,
second pressure control means for supplying a combustible gas to be analyzed at a controlled flow rate, said second control means having an input, an output and a pressure feedback,
gas mixing means for mixing air from said first pressure control means and a combustible gas to be analyzed,
valve means located at said output of said second control means for performing a valving operation on a flow of a combustible gas to be analyzed from said second control means, said valve means including a valve stem and a valve stem drive motor,
feedback pressure means connected between an output of said valve means and said feedback of said second control means for providing a feedback pressure signal to said second control means to control the pressure of said combustible gas at said output of said second control means,
combustion means connected to an output of said mixing means for producing a combustion of a mixture of said air and said combustible gas from said mixing means,
detector means for detecting the oxygen content of combustion products from the combustion of said air and said combustible gas by said combustion means,
control means responsive to said detector means for producing a control signal for controlling said valving operation of said valve means to achieve a preselected oxygen content of said combustion products,
circuit means for applying said control signal to said valve motor to effect a corresponding motion of said valve stem,
valve stem movement monitoring means connected to said valve stem for producing a signal representative of the position of said valve stem and
display means for displaying said signal from said monitoring means as an indication of the calorific content of said combustible gas.

4,380,401
BEARING SUPPORT
Selim A. Chacour, and John R. Degnan, both of York, Pa., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.
Filed May 15, 1981, Ser. No. 264,218
Int. Cl.³ F16C *35/02*
U.S. Cl. 384—438 **4 Claims**



1. A bearing support for the rotatable drive shaft of a hydraulic turbine machine having a head cover structure which is grounded to a turbine supporting structure through which the drive shaft extends;
a circular bearing surrounding the shaft;
a circular bearing support means in which said bearing is carried in position for close clearance with the drive shaft said circular bearing support comprising a cylindrical frustrum of a cone, the axis of which is concentric with respect to the axis of the drive shaft, said conic frustrum being operably connected to receive a lateral load from the bearing and transfer the load as shear to the grounded head cover;
operable means between said bearing and said bearing support means to transfer bearing load to said bearing support means comprising first and second radial rib members, said first rib member being in a horizontal plane and said second rib member being inclined at an angle, both of said ribs interconnecting in a common plane with the top portion of said cylindrical conic frustrum; and,
the base of said cylindrical conic frustrum is provided with a radial flange which is constructed and arranged to engage with the head cover surface; and,
there is provided bolt means operably disposed to secure said cylindrical conic frustrum to the grounded head cover, in a manner to permit said cylindrical conic frus-

trum to follow a radial defection of the head cover where said frustrum is rigidly connected to the head cover;

whereby an indirect relatively stiff connection is provided between the bearing and the grounded head cover while the radial movement of the head cover is effectively separated from the bearing.

4,380,402

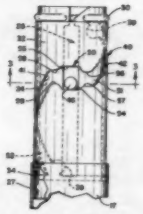
LIPSTICK-TYPE COSMETIC CASE WITH DISPLAY POSITION

Alfred G. Andrews, Wolcott, and Charles L. Sorensen, Bristol, both of Conn., assignors to Lake Eyelet Manufacturing Company, Inc., Southington, Conn.

Filed Jul. 31, 1981, Ser. No. 288,900

Int. Cl.³ A45D *40/12, 40/06*

U.S. Cl. 401—74 **4 Claims**



1. In a lipstick type cosmetic case having a generally cylindrical sleeve assembly with inner and outer, manually relatively rotatable, generally cylindrical sleeves and a cosmetic carrier axially reciprocable within the sleeve assembly between retracted and extended axial positions thereof, the carrier having a radially outwardly projecting cam follower and the two sleeves having respectively generally axially and helically extending cooperating cam track slots receiving the cam follower for manually reciprocating the carrier between its retracted and extended axial positions by manual relative rotation of the inner and outer sleeves, the generally helically extending cam track slot having helically extending cam track slot sections and an intermediate cam track slot section therebetween for selectively positioning the carrier intermediate its retracted and extended positions, the improvement wherein the intermediate cam track slot section is a circumferentially extending section having a cam track slot width greater than the width of the cam follower along the entire circumferential length of said intermediate section to permit the cam follower to freely follow therealong between said helically extending cam track slot sections and comprises a pair of axially oppositely facing generally concave cam track edges, each having a central recessed track edge portion with a circumferential length greater than the width of the cam follower and rounded convex end lobe track edge portions at the circumferential ends thereof, to form an intermediate cam track slot pocket with a pair of axially opposed end lobe track edge portions at each circumferential end thereof to retain the cam follower against inadvertent displacement from the pocket in axially upright and inverted positions of the cosmetic case and yet to permit the cam follower to move freely along the intermediate cam track slot section between said helically extending cam track slot sections upon manual relative rotation of the two sleeves.

4,380,403

CLOSURE CAP FOR A WRITING INSTRUMENT

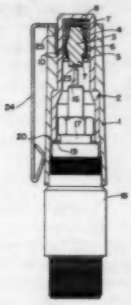
Bernhard Endres, Winkelhaid, and Klaus Glomblitza, Nuremberg, both of Fed. Rep. of Germany, assignors to J. S. Staedtler K.G., Nurnburg, Fed. Rep. of Germany

Filed Jan. 14, 1981, Ser. No. 224,930

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1980, 8001322

Int. Cl.³ B43K *9/00*

U.S. Cl. 401—213 **9 Claims**



1. A closure cap for a writing instrument comprising an outer cap housing, a sealing sleeve of a soft resilient durable material fitted within said cap housing, a tubular open ended slide sleeve of hard rigid material retained against axial movement within said sealing sleeve, a closure member of a soft resilient durable material confined within and axially displaceable within said slide sleeve and having an end engageable with a tip of a writing instrument inserted into said cap housing, said slide sleeve disposed between said sealing sleeve and said closure member, and spring means within said slide sleeve having one end abutting said sealing sleeve and another acting against said closure member toward said tip.

4,380,404

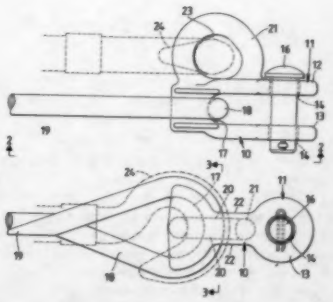
CLEVIS THIMBLE CONNECTOR

Gaddis G. Hall, P.O. Box 6699, Birmingham, Ala. 35210

Filed Nov. 19, 1980, Ser. No. 208,161

Int. Cl.³ F16C *11/00*; F16D *1/12*

U.S. Cl. 403—79 **1 Claim**



1. A clevis thimble assembly for connecting a tensioning device and a conductor to a supporting structure for sagging in a conductor on a power transmission line which comprises:

(a) an elongated body member having a clevis at one end thereof for pivotally connecting said body member to a supporting structure,

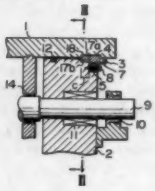
(b) a thimble carried by the other end of said body member and having a convexly curved retainer groove facing said clevis with said retainer groove defining a bearing surface,
(c) a cable-like conductor member passing around said retainer groove and secured in its position in said retainer groove,
(d) at least one laterally projecting member carried by said other end of said elongated body member at a distal point from said clevis and extending perpendicular to said retainer groove with there being an opening in said laterally projecting member in laterally spaced relation to said retainer groove and said cable-like conductor member passing around said retainer groove, and
(e) a hook-like connector element carried by said tensioning device and extending through said opening in said laterally projecting member with said hook-like connector element extending in the same direction as said cable-like conductor for tensioning said cable-like conductor to permit sagging in of a conductor on a power transmission line.

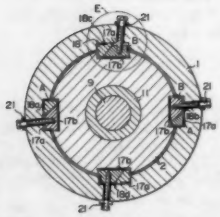
4,380,405

HEAD FLANGE MOUNTING DEVICE FOR TURBO-MACHINE

Tadashi Kaneki, Tsuchiura, and Kazuo Takeda, Shimoinayoshi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 30, 1980, Ser. No. 221,457
Claims priority, application Japan, Jan. 7, 1980, 55-150; Jan. 21, 1980, 55-4595; Jan. 21, 1980, 55-4596
Int. Cl.³ B25G *3/00*; F16D *1/00*; F16G *3/18*
U.S. Cl. 403—318 **13 Claims**





1. A head flange mounting device for a turbo-machine comprising a casing, a head flange, a shear key for mounting the head flange on the inner circumferential surface of an end portion of the casing, a rotary shaft supported by a bearing on said head flange, and a labyrinth seal supported by said casing to seal a gap between said rotary shaft and said casing, such head flange mounting device comprising:

at least two pairs of slide keyways formed circumferentially spaced apart from one another, one slide keyway of each pair being formed on the inner surface of said casing at a right angle thereto inwardly of said shear key and the other slide keyway being formed on the outer circumferential surface of said head flange at a right angle thereto so that the two slide keyways are juxtaposed against each other; and

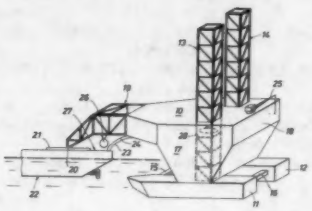
a slide key held in each pair of slide keyways in a manner preventing the relative movement of the head flange radially with respect to the casing.

4,380,406

JACKUP PLATFORM TRAILER

Ray R. Ayers, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Apr. 29, 1981, Ser. No. 258,855
Int. Cl.³ B63B *35/02*
U.S. Cl. 405—206 **25 Claims**



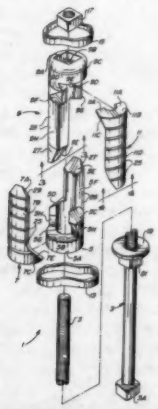
1. A jackup platform trailer comprising a deck structure supported by submersible flotation means, means for extending the flotation means downwardly beneath the deck structure, means for pivoting the flotation means and deck structure, and connecting means extending between the deck structure and the pivoting means.

4,380,407

DUAL THRUST ANCHOR SHELL ASSEMBLY

David C. Donan, Jr., Manitou, Ky., assignor to Waimes Company, Inc., Manitou, Ky.

Filed Jul. 27, 1981, Ser. No. 287,523
Int. Cl.³ E21D *11/00*
U.S. Cl. 405—259 **9 Claims**



1. An anchor shell assembly for anchoring a bolt in a roof bolt hole, said bolt having a longitudinal axis, a lower head for forcing a roof plate against a portion of a mine roof surrounding the mouth of said roof bolt hole, and a shaft with an upper threaded portion said anchor shell assembly comprising in combination:

(a) a first upper expansion member disposed pivotally relative to said axis, said first upper expansion member including an upper portion having first and second upper camming surfaces that are sloped relative to said axis, and an elongated lower portion, said elongated lower portion

having a lower camming surface that is sloped relative to said axis;

(b) a second upper expansion member disposed pivotally relative to said axis and adjacent to said first upper expansion member, said second upper expansion member having an elongated lower portion disposed on an opposite side of said shaft from said lower elongated portion of said first upper expansion member, said lower elongated portion of said second upper expansion member having a lower camming surface that is sloped relative to said axis;

(c) a first lower expansion member disposed pivotally relative to said axis, said first lower expansion member having a lower portion having first and second lower camming surfaces that are sloped relative to said axis, and an elongated upper portion having an upper camming surface that is sloped relative to said axis;

(d) a second lower expansion member disposed, pivotally relative to said axis and adjacent to said first lower expansion member, said second lower expansion member having an elongated upper portion disposed on the opposite side of said shaft from said elongated upper portion of said first lower expansion member, said upper portion of said second lower expansion member having an upper camming surface that is sloped relative to said axis;

(e) threaded nut means disposed on said threaded portion of said shaft for forcing said first and second upper expansion members toward said first and second lower expansion members in response to tightening of said bolt; and

(f) retaining means for retaining said first and second lower expansion members in fixed longitudinal relationship to said bolt during tightening of said bolt,

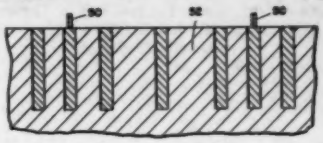
said lower camming surfaces of said first and second upper expansion members engaging said first and second lower camming surfaces of said first and second lower expansion members during said tightening of said bolt, forcing said lower portions of said first and second upper expansion members outward into roof strata surrounding the portion of said bolt adjacent to said anchor shell assembly to prevent further downward movement of said first and second upper expansion members in said roof bolt hole, an initial distance between said lower camming surfaces of said first upper expansion member and one of said first and second lower expansion members being substantially less than a corresponding initial distance between said upper camming surfaces of said first upper expansion member and one of said first and second lower expansion members, whereby further tightening of said bolt forces said roof plate tightly upward against the portion of the mine roof surrounding the mouth of said roof bolt hole before said upper camming surface of one of said first and second upper expansion members engages said upper camming surface of one of said first and second lower expansion members, respectively.

4,380,408

STABILIZING CLAY SOIL WITH DRY HYDROXY-ALUMINUM

Ter Lokes, and Odd R. Bryhn, both of Oslo, Norway, assignors to Chevron Research Company, San Francisco, Calif.

Filed Jul. 9, 1981, Ser. No. 281,751
Int. Cl.³ C09K 17/00; E02D 3/12
U.S. Cl. 405—263 **9 Claims**



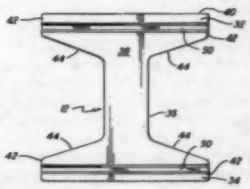
1. A method of stabilizing clay soil comprising admixing the clay soil with an effective amount of dry hydroxy-aluminum.

4,380,409

CRIB BLOCK FOR ERECTING BIN WALLS

Raymond J. O'Neill, 3 Garmony Pl., Yonkers, N.Y. 10710

Filed Aug. 17, 1981, Ser. No. 293,165
Int. Cl.³ E02D 5/00
U.S. Cl. 405—273 **4 Claims**



1. A cribbing unit for use in erecting bin wall structures of the type wherein horizontal courses of aligned ones of such units are laid on top of another to establish the structure and enclose bins therein,

said unit comprising as a unitary precast component of substantially uniform vertical thickness,

a pair of spaced side walls of equal longitudinal expanse and each having an outer vertical wall surface and transverse parallel arranged edge surfaces with the edge surfaces of one wall being in planar alignment with those of the other wall, and

a central connector arm extending between said side walls, the juncture of said connector arm with each side wall being characterized by merger segment side edges extending from the connector arm to the side walls which follow laterally widening, at least in part curvilinear courses to joinder thereof with the inner ends of the transverse edge surfaces of the respective side walls, the said merger segment side edges traversing courses of identical geometry whereby each side wall and associated merger segment is identically shaped but disposed in facing relation to the other thereby to provide such unit with identical characteristics of resistance to loading at both sides of said wall, with the transverse thickness of the side walls and merger segments from the longitudinal extremities thereof increasing toward the transverse centerline of the unit to correspondingly increase the resistance thereof to transverse bending loads applied thereto.

4,380,410

MINE-ROOF SUPPORT

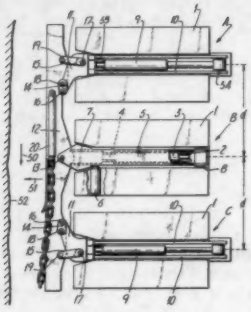
Hans Bill; Gerhard Ewich, both of Wuppertal; Günther Kuschke, Castrop-Rauxel; Alfred Maykemper, and Josef Welzel, both of Wuppertal, all of Fed. Rep. of Germany, assignors to Hermann Hemscheidt Maschinenfabrik GmbH & Co., Wuppertal, Fed. Rep. of Germany

Filed Mar. 13, 1981, Ser. No. 243,432

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1980, 3010082; Jul. 26, 1980, 3028394

Int. Cl.³ E21D *23/04*

U.S. Cl. 405—299 7 Claims



1. A self-advancing mine-roof support assembly for use in longwall mining comprising: three roof-support elements arranged side-by-side but spaced apart a predetermined lateral distance from each other measured at right angles to the direction of advance, a floor runner on each of said elements to permit movement of each element over the floor of a mine, double-acting drive means supported on each runner to move said respective runners, a rigid beam connected to the drive means of the middle one of said roof-support elements and arranged to be generally in alignment with the direction of advance of the assembly, pivot means connecting an end portion of said beam directly to an intermediate portion of an elongate abutment adapted to lie adjacent to and generally parallel to the mine work face, a first side boom connected to the drive means of an outer one of said roof-support elements, a first pair of arms pivotally connecting said side boom to an outer portion of said abutment, a second side boom connected to the drive means of the other outer one of said roof-support elements, a second pair of arms pivotally connecting said second side boom to an opposite outer portion of said abutment, said two pairs of arms being substantially equidistant from said pivot means for said beam and said abutment, whereby slanting of said abutment with respect to the direction of advance of the assembly, which slanting causes said roof-support elements to become staggered relative to each other, causes no change in the "between centres" distance between the roof-support elements.

4,380,411

SHAVING CUTTER

Masato Ainoura, 1253 Eguchi, Kita-Shigeyasu-cho, Miyaki-gun, Saga-ken, Japan

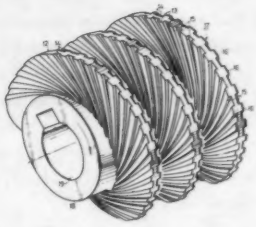
Division of Ser. No. 39,237, May 15, 1979, Pat. No. 4,280,773. This application Mar. 19, 1981, Ser. No. 245,250

Claims priority, application Japan, May 31, 1978, 53-65360; Mar. 20, 1979, 54-32469

Int. Cl.³ B26D *1/12*

U.S. Cl. 407—27 4 Claims

1. A shaver cutter for finishing gear teeth comprising, a rotational shaft, a helical thread integrally formed at a constant pitch on an outer periphery of said shaft to radially outwardly extend to a predetermined constant height, a plurality of cutting grooves formed on two flanks of said helical thread, the cutting grooves on each of the flanks being symmetrical relative to the cutting grooves on the other flank, each groove having a predetermined constant depth extending from and perpendicular to an outer surface of said flank to thereby define a central portion of reduced thickness between the two grooves provided on both flanks of the thread, said cutting grooves extending from an inner end adjacent to the shaft toward an outer end radially outwardly away from the shaft so that the cutting grooves are respectively inclined at angles



between 15° and 90° relative to lines extending radially outwardly from the shaft in the direction opposite to the rotational direction of the shaft, a plurality of lands having flat outer surfaces, said lands being located on the flanks of said thread between each adjacent two cutting grooves and having approximately the same width as that of the grooves at the inner end adjacent to the shaft, and straight cutting edges formed at front margins of said lands so that when the shaft is rotated for cutting, fluctuation due to changes in cutting resistance is eliminated.

4,380,412

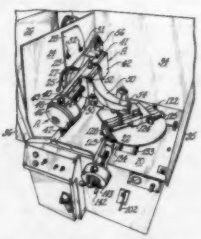
LAP SHAPING MACHINE WITH OSCILLATABLE POINT CUTTER AND SELECTIVELY ROTATABLE OR OSCILLATABLE LAP

Thomas A. Walsh, Santa Ana, Calif., assignor to R. Howard Strasbaugh, Inc., Huntington Beach, Calif.

Filed Aug. 2, 1979, Ser. No. 63,036

Int. Cl.³ B23D *7/10*

U.S. Cl. 409—314 9 Claims



1. A lap surfacing machine useful for forming laps such as employed in the production of ophthalmic lenses, comprising a support base having a pair of individually adjustable positioning units adapted, in operation, to dispose a rotatable lap and a unidirectionally operable cutter in intermittent functional engagement, the first of said positioning units comprising a generally upstanding spindle, means for selectively attaching a lap or cutter to said spindle in position of selected radial displacemen for rotation in unison therewith,

the second of said positioning units comprising an elongated arm, arcuately swingable on a pivot axis disposed generally transverse to said spindle, and distally having attachment means for selectively carrying either a cutter or a

lap, drive means for pivotal oscillation of said arm on its pivot axis whereby said distally carried cutter or lap may functionally engage the moving lap or cutter of the first positioning unit, and

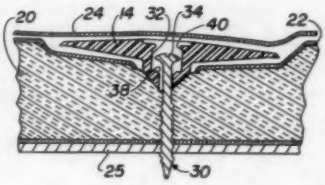
drive means for said first positioning unit including shift means for selectively continuously rotating said spindle and for oscillating the spindle synchronously with oscillation of said arm.

4,380,413

LOAD-DISTRIBUTIVE WASHER FOR USE WITH COMPRESSIBLE MATERIAL

George G. Dewey, Prospect Heights, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Nov. 3, 1980, Ser. No. 202,960
Int. Cl.³ F16B 21/07
U.S. Cl. 411—161 7 Claims



1. A resilient load-distributive washer useful in conjunction with a headed mechanical fastener to secure a first compressible material to a second base member, said washer comprising an axially extending projection which has a length that extends into but is less than the thickness of the compressible material to be fastened; a load-distributing flange extending laterally outwardly from one end of the projection, the other end of the projection being free; a throughbore positioned along the central axis of the washer and extending through the projection and the flange, at least a portion of said throughbore having a first internal lateral dimension exceeding the maximum lateral dimension of the head and a length that is at least equal to the height of the fastener head; a portion of the throughbore nearest the free end of the projection having a second smaller internal lateral dimension forming a bearing surface for the fastener head; an integral flexible and resilient ring positioned above said portion of the throughbore said ring having an inner lateral dimension less than the maximum lateral dimension of said fastener head and sufficient flexibility and resilience to permit passage of the fastener head while delimiting the relative axial movement between the washer and the fastener.

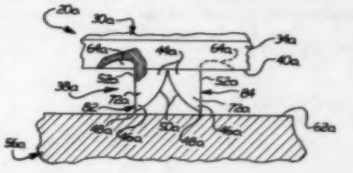
4,380,414

FASTENER

Terry D. Capuano, Hinckley, Ohio, assignor to The Lamson & Sessions Co., Cleveland, Ohio

Division of Ser. No. 26,889, Apr. 4, 1979, Pat. No. 4,289,181.
This application May 18, 1981, Ser. No. 264,284
Int. Cl.³ F16B 39/282
U.S. Cl. 411—187 3 Claims

1. A fastener element for use in applying a force against a member, said fastener element comprising a body having a longitudinally extending central axis, thread means connected with said body for engaging a mating thread to urge said body toward the member to thereby increase the force applied against the member, and retainer means connected with said body for retarding axial movement of said body away from the member and for retarding rotational movement of the body relative to the member, said retainer means including first and second spring retainer fingers, said first retainer finger being resiliently deflectable away from said second retainer finger from an initial position extending axially outwardly from said body to a retaining position extending transversely to the central axis of said body, said second retainer finger being resiliently deflectable away from said first retainer finger from an initial position extending axially outwardly from said body to a retaining position extending transversely to the central axis of said body, each of said retainer fingers having a base portion connected with the body and a free end portion spaced from the body, said free end portions of said first and second retainer fingers being spaced apart by a first distance when said first and second retainer fingers are in their initial positions and being spaced apart by a second distance which is greater than said first distance when said first and second retainer fingers are in their retaining positions, said free end portions of said first and second retainer fingers including means for penetrating the member at a pair of spaced apart locations, said first retainer finger including first cam surface means for cooperating with the member to deflect said first retainer finger from its



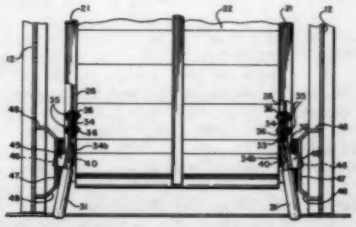
initial position to its retaining position under the influence of forces applied against said first retainer finger by the member as said first retainer finger penetrates the member, said first cam surface means including an arcuate surface which extends from the base to the free end portion of said first retainer finger and curves away from said second retainer finger, said second retainer finger including second cam surface means for cooperating with the member to deflect said second retainer finger from its initial position to its retaining position under the influence of forces applied against said second retainer finger by the member as said second retainer finger penetrates the member, said second cam surface means including an arcuate surface which extends from the base to the free end portion of said second retainer finger and curves away from said first retainer finger each of said first and second retainer fingers being substantially divided by a single imaginary circle which is concentric with the central axis of said body.

4,380,415

LATCH MECHANISM FOR WALK RAMPS

Roy C. Higginson, Honeybrook, and Paul L. Whiteman, Morgantown, both of Pa., assignors to Morgan Trailer MFG. Co., Morgantown, Pa.

Filed Sep. 29, 1980, Ser. No. 191,502
Int. Cl.³ B60P 1/00
U.S. Cl. 414—537 4 Claims



1. Latch mechanism for a walk ramp having side rails for truck bodies and the like having longitudinal body side rails

and a floor thereabove for storage below the floor of the truck body and for movement outwardly of the walk ramp with respect to the body, which comprises

a plurality of handle members pivotally carried by the side rails of the walk ramp on vertical pivots,

said truck body side rails have spaced brackets with latch plate openings therein,

each of said handle members having a latch tongue, and

resilient means for urging said handle members to position said latch tongues in said latch plate openings.

4,380,416

CENTRIFUGAL PUMPS

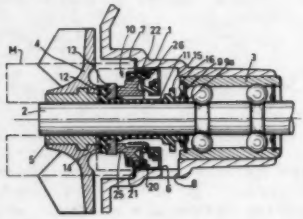
Jean Menager, Luxembourg, Luxembourg, assignor to Societe Internationale de Mecanique Industrielle S.A., Luxembourg, Luxembourg

Continuation of Ser. No. 72,617, Sep. 5, 1979, abandoned. This application Feb. 11, 1981, Ser. No. 233,307

Claims priority, application France, Sep. 25, 1978, 78 27389

Int. Cl.³ F01D *11/08*; F03B *11/00*

U.S. Cl. 415—170 A **9 Claims**



1. A centrifugal pump, of the type comprising a body, a shaft rotatably mounted in the body via a bearing, an impeller fixed on the shaft and, between the impeller and the bearing, a mechanical seal assembly comprising a pair of engaging slide rings and an inner sleeve made of elastomeric material fitted on the shaft, said sleeve comprising a portion at the end adjacent the impeller on which is fixed one of the slide rings and, at the other end adjacent the bearing, a radial flare for holding the seal assembly in the assembled state prior to its mounting and after mounting functioning as a flinger to radially throw off any liquid on its surface during operation of the pump, an axial extension on said sleeve between said radial flare and seid bearing, a seal member at the bearing end of said axial extension comprising a lip member integral with said sleeve and having an axially facing portion which in use sealingly engages a part of said bearing to prevent bearing lubricant from leaking into said seal assembly, and a radially extending opening through said pump body substantially aligned with said radial flare.

4,380,417

INSTALLATION OPERATED WITH WIND OR WATER POWER

Werner Fork, Heidenheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Jul. 2, 1980, Ser. No. 165,274

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1979, 2927956

Int. Cl.³ F03D *7/06*

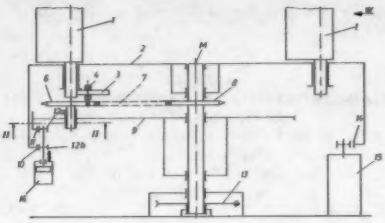
U.S. Cl. 416—108 **9 Claims**

1. A device for harnessing the energy of a fluid stream comprising:

a platform rotatably supported on a central axis;

a plurality of vanes supported on the platform for rotation about respective vane axes generally parallel to and displaced from the central axis;

means for synchronizing vane rotation about the respective vane axes relative to platform rotation about the central axis to provide each vane with the same average angular velocity as the platform including a second platform rotatable in the unison with the said platform and supporting means coupling the second platform to respective vanes,



the angular velocity of each vane about its axis exceeding the angular velocity of the platform during half of each platform revolution and being less than the platform angular velocity during the other half of each platform revolution.

4,380,418

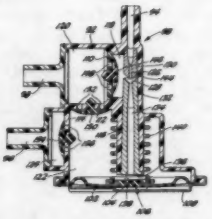
VACUUM PRESSURE SELECTION AND GENERATION DEVICE

Daniel A. Crawford, Fenton, and Wayne A. Levijoki, Clio, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 25, 1981, Ser. No. 238,141

Int. Cl.³ F04F *5/54*

U.S. Cl. 417—87 **3 Claims**



1. A venturi aspirator assembly for selectively generating a vacuum air pressure by use of positive air pressure to provide a sufficient vacuum air pressure output when insufficient vacuum air pressure to provide a sufficient vacuum air pressure output is generated by another source such as an engine intake manifold, said assembly comprising:

a venturi aspirator;

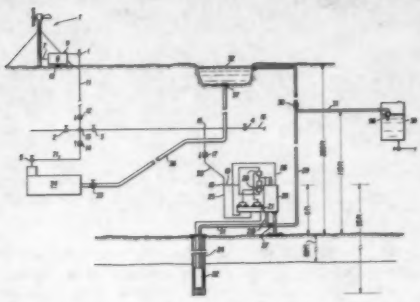
aspirator control valve means sensitive to vacuum air pressure generated by the other source and acting to condition said venturi aspirator to generate vacuum air pressure by positive air pressure flow therethrough only when the sensed vacuum air pressure generated by the other source is insufficient;

and check valve means sensitive to the sufficient vacuum air pressure output and the vacuum air pressure from the other source and the vacuum and positive air pressures from said aspirator and acting in response thereto to select the higher generated vacuum air pressure from which the sufficient vacuum air pressure output is then provided.

4,380,419
ENERGY COLLECTION AND STORAGE SYSTEM

Paul H. Morton, 180 Berkeley St., Satellite Beach, Fla. 32937

Filed Apr. 15, 1981, Ser. No. 254,503
Int. Cl.³ F04B 35/00
U.S. Cl. 417—334 10 Claims

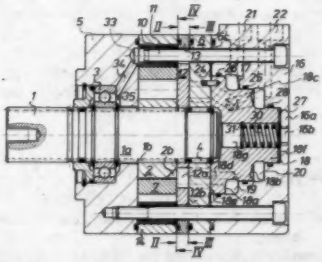


1. An energy collection and storage system, comprising:
a compressed air source;
an energy storage means for storing energy as an hydraulic pressure head;
a pneumatic water pump;
a compressed air manifold means for coupling compressed air from said compressed air source to said pneumatic water pump;
water manifold means for delivering water from said pneumatic water pump to said energy storage means; and
an hydraulic air compressor means controlled by liquid from said energy storage means for providing a supply of compressed air to said compressed air manifold.

4,380,420
INTERNAL GEAR MACHINE WITH ROTARY VALVE DISK

Peter Wüsthof, Lohr, and Johann Schneider, Lohr-Wombach, both of Fed. Rep. of Germany, assignors to Rexroth GmbH, Lohr, Fed. Rep. of Germany

Continuation of Ser. No. 84,114, Oct. 12, 1979, abandoned. This application Oct. 7, 1981, Ser. No. 309,395
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1978, 2844844
Int. Cl.³ F01C 1/113, 21/12; F03C 2/22; F04C 2/113
U.S. Cl. 418—61 B 11 Claims

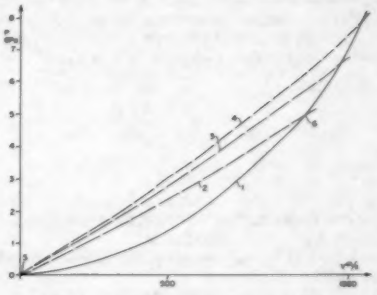


1. An internal gear machine, comprising a housing defining an intake port and a discharge port; a fluid displacement unit arranged in said housing and including a rotary shaft defining a center axis; an outer gear coupled for joint rotation to said shaft; an inner gear in sliding engagement with said outer gear and supported for performing a wobbling movement in said housing about said center axis, said inner and outer gears defining a plurality of variable chambers therebetween; and flow control means including a rotary disk coupled for joint rotation to said shaft and forming a lateral boundary wall for said chambers, said rotary disk having a plurality of first control openings each of said openings continuously communicating with interstices between the teeth of said outer gear in any position of the outer gear relative to the inner gear, and a stationary control plate adjoining said rotary disk and being formed with a plurality of second control openings cooperating with said first control openings, a part of said second control openings communicating with said intake port and another part of said second control openings communicating with said discharge port.

4,380,421
DIE FOR COMPACTION OF POWDER

David G. Morris, Lausanne, Switzerland, assignor to Institut Cerac S.A., Ecublens, Switzerland

Filed Nov. 3, 1981, Ser. No. 317,599
Claims priority, application Sweden, Nov. 10, 1980, 8007874
Int. Cl.³ B29C 1/00; B30B 11/02; B22F 3/00
U.S. Cl. 425—78 3 Claims



1. A die for compaction of powder by passing a shock wave, created by the impact of a punch, through the powder, characterized thereby that the density of the die before compaction of the powder is substantially equal to the density of the powder to be compacted and that the increase in the density caused by the passing shock wave in the powder and in the die are substantial equal.

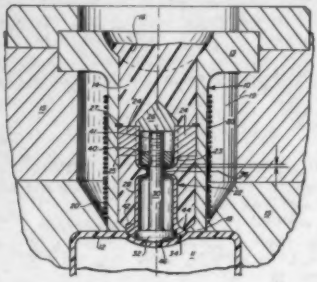
4,380,422
LONGITUDINALLY EXPANSIBLE AND CONTRACTIBLE HYDROSTATIC MOLD GATE

John W. Von Holdt, 7430 N. Croname Rd., Niles, Ill. 60648

Filed Jun. 5, 1981, Ser. No. 270,973
Int. Cl.³ B29F 1/05
U.S. Cl. 425—146 15 Claims

1. A gate for a mold which comprises a molding compound inlet conduit defining an outer end for communication with a source of molding compound and an inner end for communication with the mold cavity, and a plunger member mounted in said molding compound inlet conduit and adapted to prevent flow through said conduit in a first longitudinal position and to permit flow through said conduit in second longitudinal positions, said plunger defining a transversely enlarged sealing end proportioned to prevent said flow through the conduit in the first position, said transversely enlarged sealing end defining a mold cavity-facing surface which is of larger cross sectional area than the surface of the plunger opposed to said mold cavity and subject to contact with pressurized molding compound in the conduit, said plunger member comprising a sealed metal tubular wall, at least a portion of said tubular wall defining annular convolution means to provide a longitudinally expansible and contractible characteristic to said plunger mem-

ber, said tubular wall being immovably secured adjacent one end thereof, whereby pressurized molding compound in the conduit, relative to pressure in the mold cavity, causes said enlarged sealing end to longitudinally expand to spontaneously advance into a second longitudinal position by the action of



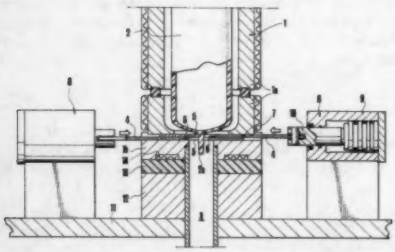
pressure on said opposed surface to open said gate, and relative equalization of elevated pressures in the mold cavity and the conduit causes said enlarged sealing end to longitudinally contract to spontaneously close to its first longitudinal position.

4,380,423

DEVICE FOR CUTTING SPRUE OF PARISON WITH BOTTOM

Katashi Aoki, 6037 Ohazaminamijo, Sakakimachi, Hanishina-gun, Nagano-ken, Japan

Filed Oct. 16, 1980, Ser. No. 197,558
Claims priority, application Japan, Oct. 19, 1979, 54-134936
Int. Cl.³ B29C *17/12*; B26D *1/09, 7/10*
U.S. Cl. 425—289 **5 Claims**



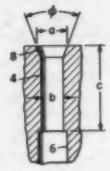
1. Apparatus comprising means defining a heating furnace having a closed cylindrical side wall and a bottom wall, said heating furnace having an open top dimensioned to receive an injection molded parison having a sprue at its lower end and said bottom wall containing a centrally positioned opening for receiving said sprue when the parison is positioned within the furnace, a pair of shears positiond adjacent the bottom opening movable transversely of the bottom opening in parallel relation thereto, said shears comprising face-to-face flat plates containing orifices which, when aligned, are concentric with the bottom opening and wherein the orifices are of a diameter to receive said sprue and define opposite cutting edges movable in shearing relation to each other by reciprocation and power operable means for effecting reciprocation of the blades.

4,380,424

PELLET DIE

Leroy V. Skoch, Glencoe, and Keith E. Pike, Washington, both of Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Filed May 28, 1981, Ser. No. 268,036
Int. Cl.³ A01N *35/00*
U.S. Cl. 425—331 **33 Claims**

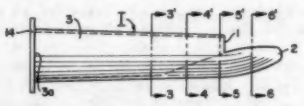


1. A pellet mill die comprising a compression side, a discharge side and at least one die hold extending through said die, having a countersink on the compression side, said die hole having a working section for pellet formation, said section having a diameter that defines pellet size and a length that defines the effective thickness for the die hole, said die hole having ratio of effective thickness to countersink diameter which is at least about 1.8 to 1 and a countersink diameter which is between about 137% to 159% of the working section diameter.

4,380,425

CAULKING SPOUT

David J. Edelman, 142 Flanders-Netcong Rd., Flanders, N.J. 07836

Continuation-in-part of Ser. No. 46,561, Jun. 7, 1979, abandoned. This application Feb. 17, 1981, Ser. No. 234,597
Int. Cl.³ B29F *3/04*
U.S. Cl. 425—458 **3 Claims**

1. An applicator for sealing compounds comprising a tubular spout having an inlet opening and an outlet orifice, an applicator tip formed integrally with said applicator extending from inside said spout inwardly of said outlet orifice to a point outwardly of said outlet orifice and being angled inwardly of said spout, the outer end of said tip converging inwardly and having a substantially oval cross-section in the vicinity of said outlet orifice to form a finger-like projection and forming a crescent-shaped opening at said outlet orifice.

4,380,426

INJECTION MOLDING VALVE PIN DIRECT PNEUMATIC ACTUATOR

William J. Wiles, R.R. 1, Cedar Valley, East Gwillinbury, Ontario, Canada

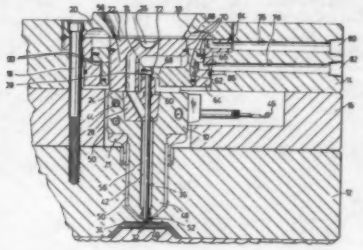
Continuation-in-part of Ser. No. 353,014, Mar. 1, 1982. This application Jul. 19, 1982, Ser. No. 399,730
Claims priority, application Canada, Feb. 24, 1982, 396997
Int. Cl.³ B29F *1/05*
U.S. Cl. 425—566 **9 Claims**

1. In a valve gated center entry injection molding system comprising a heater cast seated in a cooled cavity plate, a gate through the cavity plate leading to a cavity, an elongated valve pin which reciprocates in a bore in the heater cast between open and closed positions, the valve pin having a driven end

and a tip end which seats in the gate in the closed position, valve pin actuating mechanism, and a melt passage which receives pressurized melt from a molding machine at a center entry and extends through the heater cast to the gate, the improvement wherein;

the valve pin actuating mechanism comprises a pneumatically operated piston which reciprocates in a cylinder generally in alignment with the valve pin and engages the driven end of the valve pin, the melt passage from the center entry to the gate disc extending through the piston cylinder.

7. In a valve gated center entry injection molding system comprising a heater cast seated between a back plate and a cooled cavity plate, a gate through the cavity plate leading to a cavity, a melt passage which receives pressurized melt from



a molding machine and extends from a center entry in the back plate through an offset portion of the back plate and the heater cast to the gate, an elongated valve pin which reciprocates in a bore in the heater cast with a central longitudinal axis in alignment with the gate and the center entry, the valve pin having a driven end and a tip end which seats in the gate in the closed position and valve pin actuating mechanism, the improvement wherein;

the valve pin actuating mechanism comprises a pneumatically operated double acting piston which reciprocates in a cylinder, the piston having an outer collar portion and a tongue portion, the outer collar portion encircling the back plate and sealingly received between the back plate and the cylinder, the tongue portion extending inwardly from the collar portion to operatively engage the driven end of the valve pin.

4,380,427

COMPACT HYDRAULIC DRIVE FOR DIE CLOSING UNIT OF INJECTION MOLDING MACHINE

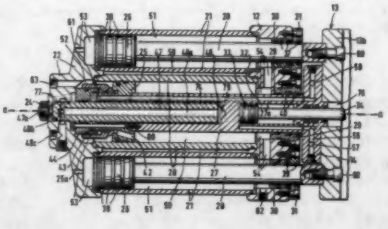
Karl Hehl, Arthur-Hehl-Strasse 32, 7298 Lossburg 1, Fed. Rep. of Germany

Filed Nov. 24, 1981, Ser. No. 324,625

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1980, 3044137

Int. Cl.³ B29F *1/06*

U.S. Cl. 425—590 **12 Claims**



1. A compact hydraulic actuator assembly adapted for use in a die closing unit of an injection molding machine as a rapid-travel opening and closing drive as well as a source of elevated die closing pressure, which die closing unit includes a stationary cylinder head plate and a movable die carrier member guided for die opening and closing travel along the center axis of the die closing unit, its die closing travel being a movement away from the stationary cylinder head plate in an axially forward direction, said hydraulic actuator assembly comprising in combination:

a power cylinder extending rearwardly from the cylinder head plate, in alignment with the center axis of the die closing unit, the power cylinder having a cylinder bore cooperating with a power piston on a piston rod which extends sealingly through the cylinder head plate and is connected to the movable die carrier member;

a cover on the rearward extremity of the power cylinder defining a high-pressure space between it and the power piston;

a closable power piston bypass in the form of at least one bypass channel connecting the high-pressure space of the power cylinder with a low-pressure space of the power cylinder defined between the power piston and the cylinder head plate, the effective area of the high-pressure space being larger than the effective area of the low-pressure space so that, when the power piston moves rearwardly with its piston bypass open, a volume of excess fluid corresponding to the difference between the two pressure space areas is displaced out of the power cylinder;

a travel cylinder arranged parallel to the power cylinder and extending likewise rearwardly from the cylinder head plate, the travel cylinder having a cylinder bore cooperating with a travel piston on a piston rod which extends sealingly through the cylinder head plate and is likewise connected to the movable die carrier member, for movements in unison with the power piston;

a travel cylinder pressure space defined between the travel piston and the cylinder head plate, the effective area of the travel cylinder pressure space being larger than said difference between the two pressure space areas of the power cylinder by a predetermined, relatively small net opening travel area;

a flow connection between the low-pressure space of the power cylinder and the travel cylinder pressure space so arranged that, when the pistons move rearwardly as aforesaid, said excess fluid is displaced from the low-pressure space of the power cylinder into the pressure space of the travel cylinder, and the additional entry into one of said connected pressure spaces of a pressurized fluid volume corresponding to the net opening travel area creates the rearward movements of the pistons, whereby an opening travel of the movable die carrier member is produced with a relatively small volume of pressurized fluid;

means for hydraulically closing the power piston bypass; and

means for supply pressurized fluid to the high-pressure space of the power piston, so as to create an elevated die closing pressure against the movable die carrier member in the closed position of the die closing unit, when the power piston bypass is closed.

4,380,428

SAFETY TIP-OVER DEVICE FOR PORTABLE GAS-FIRED INFRARED RADIANT HEATER

Mario Rozzi, St. Clair Shores, Mich., assignor to Detroit Radiant Products Company, Detroit, Mich.

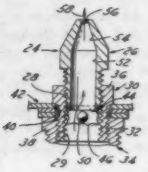
Continuation of Ser. No. 846,025, Oct. 27, 1977, abandoned. This application Aug. 26, 1982, Ser. No. 412,011

Int. Cl.³ F23N *5/24*

U.S. Cl. 431—88 **2 Claims**

1. A safety tip-over device for a portable gas-fired radiant heater including a container for burnable gas under pressure having a burner mounted thereon, said device comprising an

orifice structure mounted on the container for emitting burnable gas into the burner, said orifice structure including a passageway having a first portion of relatively large diameter and terminating in a restricted portion having an orifice through which said burnable gas is emitted, a foraminous wall in said passageway upstream from said restricted portion, a freely movable valve element in said passageway downstream from said foraminous wall, said valve element being of lesser



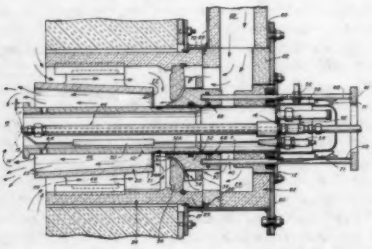
size than the diameter of said first portion of the passageway to permit free passage of burnable gas when the passageway is angled substantially upwardly, said foraminous wall permitting free passage of burnable gas but preventing said valve element from passing thereby, said valve element being of greater size than said orifice and reactive to the pressure of burnable gas flowing through the orifice structure to move into blocking position with respect to said orifice when the passageway is angled horizontally or slightly upwardly.

4,380,429

RECIRCULATING BURNER

Paul G. LaHaye, and John W. Bjerklie, both of Cape Elizabeth, Me., assignors to Hague International, Portland, Me.

Filed Nov. 2, 1979, Ser. No. 90,731
Int. Cl.³ F23L *7/00*
U.S. Cl. 431—115 **19 Claims**



1. A burner capable of operating with combustion air delivered to the burner at temperatures of from 600° F. to 2400° F. and higher, said burner comprising,

a center tube defining a forwardly extending ceramic high temperature resistant tube portion having a flame holder at a forward end of said burner,

an encircling ceramic high temperature resistant burner barrel extending about said ceramic tube,

an encircling recirculating ceramic high temperature resistant sleeve extending about said ceramic tube between said tube and said barrel and defining a recirculating gas passageway such that furnace gases can be carried from a forward end of said burner between said sleeve to a rearward area of said burner and then forwardly between said tube and sleeve completely surrounding said tube and then out of said forward end,

said rearward area encircling said center tube,

and combustion air means for providing a combustion air flow axially of said center tube between said center tube and said sleeve,

said combustion air means comprising a ceramic high temperature resistant lined chamber and a ceramic high temperature resistant annular chamber plug,

means forming an annular outlet from said chamber to said rearward area,

means for mounting said plug for movement in a direction axially of said center tube to adjust the size of said outlet and thus adjust the passage of combustion air to the rearward area between the center tube and the sleeve,

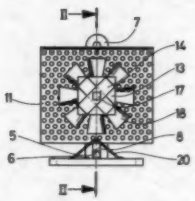
and fuel injector means positioned within said center tube and positioned to inject fuel at the forward end thereof.

4,380,430

CENTRAL HEATING APPARATUS

Constant Vuissoz, deceased, late of Grone, Switzerland (by Marie Vuissoz-de Preux, heir); by Cesarine Mosoni-Vuissoz, heir, Granges, and by Suzanne Voide-Vuissoz, heir, Rechy, both of Switzerland, assignors to Limtel, Ltd., Great Britain

Filed Mar. 9, 1981, Ser. No. 241,526
Claims priority, application Switzerland, Mar. 11, 1980, 1877/80
Int. Cl.³ F23D *13/12*
U.S. Cl. 431—347 **7 Claims**



1. In a central heating apparatus comprising a boiler having walls defining a combustion chamber, a burner nozzle projecting a flame into the combustion chamber toward an opposite wall thereof, and a flame-permeable structure interposed between the nozzle and said opposite wall, the improvement that said flame-permeable structure comprises at least one flame-resistant sheet metal plate disposed in a plane approximately perpendicular to the direction of projection of said flame and having therein a multiplicity of small perforations formed by a piercing tool without removal of material to provide around the edge of each perforation protruding burs directed toward said nozzle, said burs being heated white-hot by the flame in order to improve fuel combustion and thereby reduce the release of smoke and soot deposits in the combustion chamber.

4,380,431

TECHNIQUE FOR ELEVATING THE TEMPERATURE OF A FLUID

Roy C. Carlson, Jr., Boxford Township, Essex County, Mass., and Edward J. March, Lower Makefield Township, Bucks County, Pa., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Jun. 29, 1981, Ser. No. 278,152
Int. Cl.³ F26B *3/00*; F22D *1/28*
U.S. Cl. 432—29 **2 Claims**

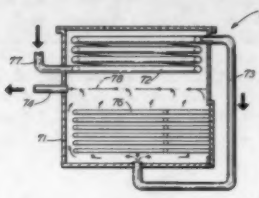
1. A method of elevating the temperature of a low temperature liquid, comprising the steps of:

directing the low temperature liquid through coils mounted in the upper portion of an enclosed chamber;

passing the liquid from the coils to a reservoir in the lower part of the chamber;

heating the liquid, in the reservoir, to the elevated temperature, proximate its boiling point, which forms a vapor thereof in the upper portion of the chamber; and

condensing the vapor on the coils to transfer the latent heat of vaporization thereof to the coils to preheat the liquid



while simultaneously lowering the pressure within the chamber; and

discharging the heated liquid from the chamber.

4,380,432

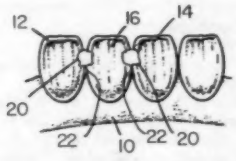
METHOD FOR ADHERING STRUCTURES TO TEETH

Jan A. Orlowski, Altadena, and David V. Butler, West Covina, both of Calif., assignors to Scientific Pharmaceuticals, Duarte, Calif. and Sankin Industries, Ltd., Tokyo, Japan

Filed Sep. 3, 1980, Ser. No. 183,743

Int. Cl.³ A61K *6/08*

U.S. Cl. 433—9 **19 Claims**



1. A method for adhesively mounting in the mouth a dental article which is a pontic or a fixed bridge of one or more pontic teeth by securing bonding surfaces on the article to be mounted in the mouth to support surfaces respectively of abutment teeth that are adjacent the mounting location of the article but at opposite sides of it respectively, comprising the steps of:

(i) etching said support surfaces of said abutment teeth with a suitable chemical etchant;

(ii) applying a curable dental adhesive to said bonding surfaces on said article and to said etched support surfaces of said abutment teeth; and

(iii) contacting said bonding surfaces with said support surfaces, each surface containing said applied dental adhesive of step (ii), whereby said adhesive hardens to bond the dental article in place,

wherein said dental adhesive is a methacrylate based dental adhesive comprising from about 2.5% to about 30% by weight of an elastomer or a mixture of two or more of said elastomers, said elastomer or elastomers being selected from the group consisting of homopolymers and copolymers of at least one conjugated diene monomer containing 4 to 10 carbon atoms.

4,380,433

DENTAL WIRE DISPENSER AND MOUNTING TOOL

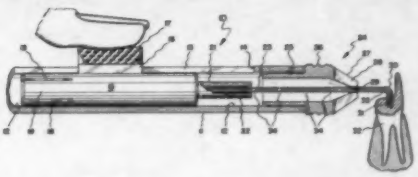
Alan G. Ellman, 1 Auerbach La., Lawrence, N.Y. 11516, and Jon C. Garito, 22 Deering La., East Rockaway, N.Y. 11558

Continuation of Ser. No. 61,276, Jul. 27, 1979, abandoned, which is a continuation-in-part of Ser. No. 917,533, Jun. 21, 1978, abandoned. This application May 26, 1981, Ser. No. 267,007

Int. Cl.³ A61C *1/10, 1/12, 17/02*; B25G *3/28*

U.S. Cl. 433—87 **13 Claims**

1. In combination with an elongated continuous strip of threaded straight dental pins of predetermined diameter notched at periodic intervals, a dental pin dispenser for dispensing and mounting said threaded pins, said dispenser comprising an elongated substantially tubular handle having a hollow interior portion for receiving the continuous strip of threaded pins and at one handle end a nozzle having an exiting orifice leading to the interior, said exiting orifice being sized and adapted to provide a snug fit with the continuous strip of pins and yet allow passage of the strip from the handle interior to the outside, said nozzle being adapted to allow a dentist holding the dispenser handle to manipulate a pin at the strip



end and which pin end protrudes from the nozzle for inserting the pin end into a predrilled hole in tooth dentin and for breaking off the pin from the strip at a notch after cementing the pin in the tooth hole, said elongated length of continuous strip of threaded pins extending lengthwise within the handle interior and aligned with the nozzle orifice, and means on the handle and connected to said strip for gripping and sliding said strip from the interior through the nozzle orifice to the outside under control of the dentist.

4,380,434

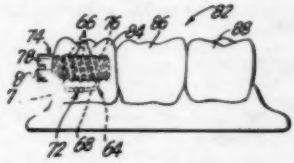
DETENT DEVICE FOR A REMOVABLE DENTAL PROSTHESIS

Bernard Weissman, 225 E. 48th St., New York, N.Y. 10017

Filed Apr. 7, 1981, Ser. No. 251,867

Int. Cl.³ A61C *13/22*

U.S. Cl. 433—177 **13 Claims**



1. A detent device for a removable dental prosthesis, said device comprising:

a tubular member, said tubular member being externally threaded;

a spring loaded plunger movably disposed in said tubular member with an end portion of said plunger projecting outwardly from said tubular member;

stop means within said tubular member for limiting longitudinal movement of said plunger end portion;

a spring member enclosable in the dental prosthesis when the dental prosthesis is being formed, said spring member determining location of said tubular member in the dental prosthesis and retaining said tubular member in the dental prosthesis;

said spring member having helical loops;

said tubular member being inserted through said loops with said loops engaging the external threads of said tubular member; and

said spring member including securing means for providing a fixed securement of said spring member in the dental prosthesis.

4,380,435

PERMANENT ONE VISIT BONDED BRIDGE NO DRILLING, AND KIT THEREFOR

Arthur Raeder, and Celia R. Raeder, both of 615 Eastern Pkwy., Brooklyn, N.Y. 11216

Continuation-in-part of Ser. No. 938,423, Aug. 31, 1978, abandoned. This application Nov. 24, 1980, Ser. No. 209,321

Int. Cl.³ A61C *13/22*

U.S. Cl. 433—180 **29 Claims**

1. A kit for making and inserting a dental bridge in a gap between natural teeth in a human mouth, said kit comprising:

a generally arch-shaped piece of a rigid material having approximately the shape of a geometric curve defined by the central fossae of the posterior teeth and the lingual surfaces of the anterior teeth of one jaw of a human mouth; said piece being adapted to have at least one artificial tooth mounted thereon and having such a cross-sectional shape that a length of said piece can be secured to at least one natural tooth to each side of said gap by means of being received in a groove formed in the surface of each of said natural teeth, and

a sufficient quantity of copolymer usable for forming an ultraviolet light transmissive matrix for aligning said at least one artificial tooth.

4,380,436

SUPPORT FOR A REMOVABLE DENTAL PROSTHESIS

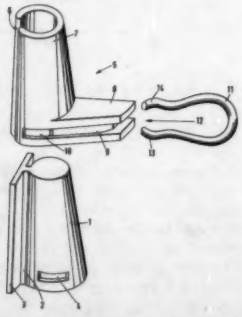
Manfred Kipp, Sande, Fed. Rep. of Germany, assignor to Dental Keramik Sande GmbH, Sande, Fed. Rep. of Germany

Filed Oct. 1, 1981, Ser. No. 307,392

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1980, 3107690

Int. Cl.³ A61C *13/22*

U.S. Cl. 433—182 **2 Claims**



1. A support for a removable dental prosthesis on the remainder of the natural teeth, comprising:

a male support element and a female support element, said male support element being securable to the base of a crown of a capped tooth of one's remaining natural teeth, and said female support member being securable to a dental prosthesis, said male support element and said female support element being configured for positive locking and telescopic displacement relative to one another and, in an end position thereof, mutual interengagement therebetween, said male support element comprising a vertically-disposed, generally conical pin having a recess, and said female support element comprising a vertically-disposed, generally conical bushing configured to encompass said pin which bushing is provided with an inwardly-protruding spring element removably mounted thereon which is disposed for bias engagement with said recess of said pin when said bushing is fully received on said pin.

4,380,437

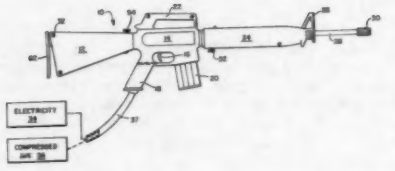
SMALL WEAPONS SIMULATOR

G. Wirth Yarborough, Jr., 1150 Dauphin St., Mobile, Ala. 36604

Filed Sep. 4, 1981, Ser. No. 299,335

Int. Cl.³ F41F *27/00*

U.S. Cl. 434—18 **2 Claims**



1. A small weapons simulator for marksmanship training, said simulator comprising:

a gun body having an external buttstock, action housing, forestock and muzzle configuration resembling a weapon to be simulated;

a transmitter supported within said body for transmitting a light beam forwardly along the barrel axis of said body;

recoil means supported within said body to develop a rearwardly directed force impulse when actuated, said recoil means comprising a pneumatic piston-cylinder module;

muzzle rise simulating means for developing a force upon actuation to lift the forward portion of said body; and

means for simultaneously actuating said transmitter, said recoil means and said muzzle rise means, said actuating means comprising means defining a supply of compressed air to said gun body and trigger actuated valve means for actuating said piston-cylinder module.

4,380,438

AUTOMATED STUDY VOICE RECORD/REPRODUCTION SYSTEM

Ikuko Okamoto, Tokyo, Japan, assignor to Yugen Kaisha Batora Konsaruteingu, Tokyo, Japan

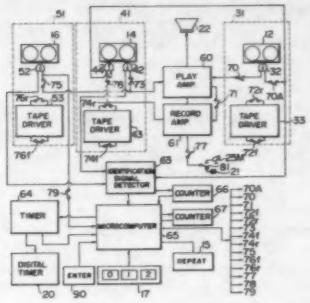
Filed Aug. 31, 1981, Ser. No. 298,216

Int. Cl.³ G09B *5/04*

U.S. Cl. 434—157 **9 Claims**

1. A study voice record/reproduction system comprising a master study materials reproduction section including a first recording medium for recording thereon master study voice signals and identification signals each inserted between blocks in said master voice signals to distinguish one block from another, first medium driving means for driving said first recording medium, and a reproduction unit for reproducing signals recorded on the first recording medium when the first recording medium is driven forward by said first driving means; a practice record/reproduction section including a second recording medium for recording thereon signals from said master reproduction section or voice signals from a microphone, second medium driving means for driving said second recording medium forward and backward, and a reproduction unit for reproducing on the second recording medium said signals from the master reproduction section or said signals from said microphone when said second medium driving means drives the second recording medium forward; a pro-

gram reproduction section including a third recording medium for recording thereon instruction voice signals, command program signals and identification signals for distinguishing between said instruction voice signals and said command program signals, third medium driving means for driving said third recording medium forward and backward, and a reproduction unit for reproducing signals recorded on the third



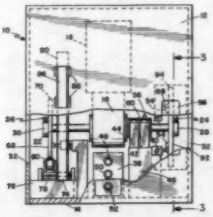
recording medium at the time of driving the third recording medium; and a control section for storing the contents of program signals read from said program reproduction means thereby to control each driving of the master study materials reproduction section, said practice record/reproduction section and the program reproduction section in accordance with said program signals.

4,380,439

NECK VENOUS AND ARTERIAL EXAMINATION TEACHING INSTRUMENT

Arthur Kreitenberg, 5860 Cozzens St., San Diego, Calif. 92122

Filed Sep. 8, 1981, Ser. No. 299,840
Int. Cl.³ G09B *23/32*
U.S. Cl. 434—268 **6 Claims**



1. A neck venous and arterial examination teaching instrument comprising:

a base member,

a cover attachable to the base member and having a first surface and an adjacent second surface,

sensing means mountable in the cover for producing human sensible fluctuations in simulated blood circulatory systems in response to at least one heart beat cycle,

interchangeable cam means having undulating contours simulating normal and abnormal heart pulse wave forms for activating the sensing means,

motor means for operating the cam means, and

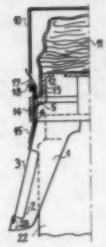
wherein the motor means and cam means are mountable on the base and enclosed within the cover to produce a self-contained hand portable instrument.

4,380,440

DROPPABLE AIRBORNE BUOY

Vito Suppa, Paris, France, assignor to Thomson-CSF, Paris, France

Continuation-in-part of Ser. No. 57,422, Jul. 13, 1979, Pat. No. 4,279,025. This application Aug. 26, 1980, Ser. No. 181,650
Claims priority, application France, Aug. 28, 1979, 79 21562
Int. Cl.³ B63B *21/52*
U.S. Cl. 441—30 **3 Claims**



1. A buoy capable of being dropped onto water from an aircraft, comprising: an inflatable balloon attached to a container; said balloon being inflated during its descent by a forced intake of air at the base thereof; said buoy having adjustable openings in the form of scoops; said forced intake of air taking place through the opening of these scoops; each of said scoops comprising a window covered inside by a flexible cloth; said cloth being inflated when the scoops lift up during the drop of said buoy; said cloth actuating a freeing mechanism for releasing a protecting hood capping said balloon.

4,380,441

FLOTATION VEST

Robert G. Harr, Whittier, and Gaylord T. Soli, San Marino, both of Calif., assignors to America's Cup, Inc., City of Industry, Calif.

Filed Mar. 2, 1981, Ser. No. 239,460
Int. Cl.³ B63C *9/08*
U.S. Cl. 441—112 **16 Claims**

1. A flotation vest having an outer shell including a back section and left and right front sections joined to the back section at the top and at the sides to form arm holes, and internal buoyancy means carried by the shell and including front portions formed by at least four pieces of buoyancy material which when properly fitted edgewise together form rectangular pieces such that there is no waste material in cutting the pieces from rectangular sheets, the front buoyancy portions include a lower body piece and a shoulder piece carried by each of the left and right front sections, each of said body pieces having a lower edge, a central edge, a side edge, and an upper edge, each shoulder piece including a lower edge, an arm hole edge, a neck hole edge, and an upper edge, the shoulder piece lower edge being positioned to engage the body piece upper edge with said engaging edges being formed to

engage at an angle such that the arm hole edge and the neck hole edge of the shoulder piece slope at an angle upwardly and outwardly away from the body piece central edge, the width of a shoulder piece between the arm hole and neck hole edges being considerably less than the width of a body piece between its side and central edges so that with the shoulder piece lower edge being positioned close to the body piece central edge, a portion of the body piece upper edge forms an arm hole with the arm hole edge of a shoulder piece.

4,380,442

FLEXIBLE COUPLING

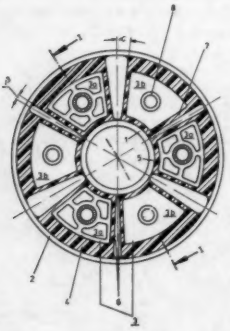
Friedrich-Wilhelm Amsel, Gorxheimertal, Fed. Rep. of Germany, assignor to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Feb. 20, 1981, Ser. No. 236,183

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1980, 3010127

Int. Cl.³ F16D *3/00, 3/58*

U.S. Cl. 464—93 8 Claims



1. In a rotary flexible coupling having first and second sets of driver blocks, the blocks of each set being spaced equally apart around the axis of rotation, the blocks of the first set being interleaved between the blocks of the second set, each of the blocks having radial end faces and having inner and outer circumferential surfaces, a first set of fastening elements to connect the first set of blocks to an input flange to receive torque therefrom, and a second set of fastening elements to connect the second set of blocks to an output flange to transmit torque thereto, the invention comprising:

a first tire of inelastic material spaced radially inwardly from the inner circumferential surfaces of the blocks;

a second tire of inelastic material spaced radially outwardly from the outer circumferential surfaces of the blocks;

an inner layer of elastomeric material comprising cylindrical segments joining the inner circumferential surface of each of the blocks with the first tire; and

an outer layer of elastomeric material comprising cylindrical segments joining the outer circumferential surface of each of the blocks with the second tire.

4,380,443

FIBER-REINFORCED DRIVE SHAFT

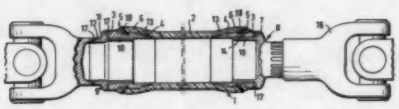
Helmut Federmann, Berg. Gladbach, and Joachim Bausch, Dürscheid, both of Fed. Rep. of Germany, assignors to Felten & Guilleaume Carlswerk Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 203,669, Nov. 3, 1980. This application Jun. 9, 1981, Ser. No. 271,844

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1979, 2946530; Jul. 19, 1980, 3027432

Int. Cl.³ F16C *3/00*

U.S. Cl. 464—181 17 Claims



1. A drive shaft, particularly for motor vehicles, comprising a tubular shaft part having an axis and two axially spaced end portions and being composed of a fiber-reinforced synthetic plastic material; two end pieces each associated with a respective one of said end portions of said shaft and having a sleeve-shaped section extending into and surrounded by a respective one of said end portions of said shaft part, and a ring-shaped section extending axially outwardly from said sleeve-shaped section and having an inner end face which forms a stop and a protective end abutment for a respective one of said end portions of said shaft part, said end pieces being constituted of metal; and means for connecting said end pieces with said shaft part, said connecting means including a plurality of anchoring members provided in each of said end pieces, said anchoring members being arranged on said sleeve-shaped section so that they extend substantially radially outwardly at a plurality of circumferentially spaced locations in the vicinity of a transition between said sleeve-shaped section and said ring-shaped section of each of said end pieces.

4,380,444

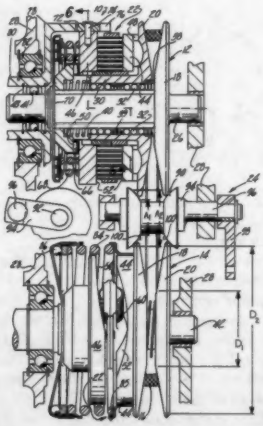
VARIABLE RATIO BELT DRIVE

John Dolza, 810 State Rd., Fenton, Mich. 48430

Filed Apr. 27, 1981, Ser. No. 257,526

Int. Cl.³ F16H *55/56*

U.S. Cl. 474—21 29 Claims



1. A variable ratio pulley for a belt drive comprising: a pair of disk-shaped flanges supported coaxially of each other for

rotation as a unit and for movement axially relative to each other, said flanges having conical surfaces converging relative to each other radially inwardly and adapted to receive a transmission belt therebetween extending around and tangentially toward and away from said flanges, ratio control means for moving said flanges axially to selected positions relative to each other to change the pitch radius at which said belt engages said opposed conical surfaces, and means urging said flanges axially toward each other with a force substantially proportional to the net tangential force between said flanges and said belt in all of said selected positions of said belt relative to said flanges, said means urging said flanges toward each other including control members having opposed control surfaces, said control members being rotatable relative to each other, one of said members being connected to one of said flanges of said pulley for movement therewith and another of said members being connected to a rotary input member, roller assemblies each including a plurality of rolling elements rotatable independently of each other on radially extending axes intersecting the axis of said pulley and disposed between and in engagement with said surfaces to move said members axially apart on relative rotation of said members to move said flanges of said pulley axially relative to each other and against said belt with a force substantially proportional to the tangential force of said belt.

4,380,445

TRANSMISSION FOR A BICYCLE

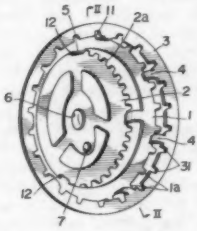
Keizo Shimano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

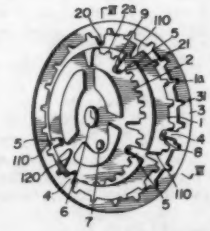
Filed Aug. 4, 1975, Ser. No. 601,652

Claims priority, application Japan, Aug. 16, 1974, 49-94477; Aug. 16, 1974, 49-94478

Int. Cl.³ F16P *1/00*

U.S. Cl. 474—144 **13 Claims**





1. A compound sprocket structure particularly advantageous for use in a bicycle or other vehicle comprising a single plate structure including at least two plate segments each of which has a peripheral edge formed to include a set of teeth, one of said plate segments being offset from the other to provide that said plate segments are arranged thereby to lie in adjacent substantially parallel planes, one of said plate segments being rimmed by and lying within the boundary of the other and the outer of said plate segments having an annular shape, and strip-like plate portions providing connector means joining the respective plate segments, as a continuing part thereof, to rigidly maintain said plate segments in their respective offset substantially parallel planes.

4,380,446

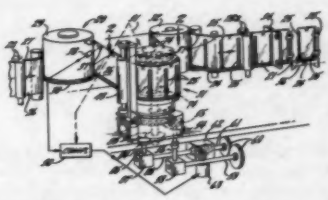
SIDE SEALING MECHANISM FOR A PACKAGING MACHINE

J. Douglas Dickson; J. David Sweeney, and Ronald K. Coleman, all of Columbus, Ohio, assignors to Rexham Corporation, New York, N.Y.

Filed Sep. 12, 1980, Ser. No. 186,697

Int. Cl.³ B31B *1/10, 1/64*

U.S. Cl. 493—11 **6 Claims**



1. Mechanism for sealing together two face-to-face strips of heat-sealable material at longitudinally spaced positions along the strips as the latter are advanced with continuous motion along a predetermined path, one of said strips having targets spaced longitudinally therealong with the spacing between successive targets being approximately equal, said mechanism comprising a frame, a drum mounted on said frame to rotate about a predetermined axis, a plurality of heat sealing bars carried by and spaced circumferentially around said drum, one of said strips engaging said sealing bars as said strips are advanced along said path, means mounting said sealing bars on said drum to move radially inwardly and outwardly relative to the drum to thereby enable the radial position and the circumferential spacing of said sealing bars to be changed, an actuator connected to said sealing bars and rotatable with said drum, said actuator also being rotatable relative to said drum and being operable when so rotated to move said sealing bars radially inwardly or outwardly relative to said drum, means for detecting said targets and for producing command signals indicative of the spacing between said targets, means for detecting said sealing bars and for producing feedback signals indicative of the circumferential spacing of said sealing bars, means for comparing said command and feedback signals, and power-operated means responsive to said comparing means and operable to rotate said actuator relative to said drum when the spacing between said sealing bars differs from the spacing between said targets.

4,380,447

METHOD OF CLOSING AN OPEN END OF A TUBE OR TUBULAR CONTAINER

Thomas VanderLugt, Jr., Kalamazoo, Mich., assignor to James River Corporation of Virginia, Richmond, Va.

Division of Ser. No. 71,242, Aug. 30, 1979, Pat. No. 4,291,829. This application Sep. 12, 1980, Ser. No. 186,416

Int. Cl.³ B31B *17/00*

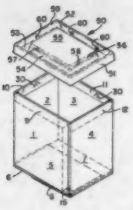
U.S. Cl. 493—102 **9 Claims**

1. A method of closing an open end of a tube or tubular container, having upstanding walls, the end edges of which walls are folded-over and adhered to said walls to form a folded-over, reinforced portion of double thickness at that end of the tube or tubular container, the inner exposed surface of said folded-over, edge-reinforced portions of the upstanding walls having areas of low resistance defined therein for facili-

tating the removable securement of a closure member thereto, comprising the steps of placing a container closure member, comprising an upstanding tubular inner wall conforming to the inner surfaces of the walls of the tube or tubular container to be closed by said closure member, and

a downstanding tubular outer wall connected thereto by a bight and conforming to the outer surfaces of the walls of the tube or tubular container to be closed by said closure member,

thereby forming a tubular channel in which said upstanding walls can be seated in frictional engagement, and



a centrally located upwardly-elevated dome portion, defined by an upstanding dome-forming wall which is inwardly spaced from the said upstanding tubular inner wall of said closure member, the said two upstanding walls of said closure member defining a tubular valley therebetween, onto the reinforced end of said tube or tubular container, and forcing lugs in the upstanding tubular inner wall of said closure member into complementary areas of low resistance in the inner exposed surface of the walls of the said tube or tubular container.

4,380,448

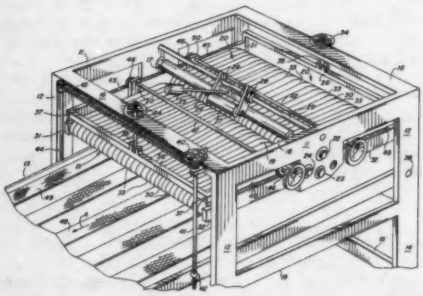
PAPER STOP ADJUSTMENT MECHANISM FOR CONTINUOUS FORM STATIONERY FOLDING MACHINE

Earnest B. Bunch, Jr., Peoria, Ariz., assignor to B. Bunch Company, Inc., Phoenix, Ariz.

Filed Sep. 22, 1980, Ser. No. 189,787

Int. Cl.³ B65H *45/00, 45/20*

U.S. Cl. 493—410 **2 Claims**



1. In combination with apparatus for producing continuous form stationery by folding a strip of paper along transverse lines of weakening formed therein, said apparatus including,

a frame;

generally horizontally disposed endless belt means mounted on said frame for alternately distributing said successive lines of weakening in said paper in substantially opposite lateral directions of travel to form creased edges in said paper along said lines of weakening, said belt means including

a pair of spaced adjacent parallelably disposed paper distribution rollers, each of said rollers having

a generally constant diameter along the length thereof, and

a longitudinal axis about which said rollers rotate, said longitudinal axes being generally horizontally disposed; and,

belts trained around said distribution rollers;

means carried on said frame for directing said continuous strip of paper between said distribution rollers and into contact with at least some of said belts for said lateral distribution in said substantially opposite directions, said lateral distribution directions being generally perpendicular to said longitudinal axes of said distribution rollers;

a support surface for receiving paper distributed by said endless belt means;

a pair of opposed assemblies carried by said frame and positioned

above said support surface, and

laterally from said distribution rollers

for periodically tamping said paper dispensed from said paper distribution rollers of said endless belt means to assist in folding and positioning said paper on said support surface, each of said tamping assemblies

being spaced apart from the other, and

located on an opposite side of an imaginary midline lying between and generally parallel to the longitudinal axes of said adjacent distribution rollers;

a pair of opposed paper stop assemblies carried for movement independently of said distribution rollers and opposed assemblies on said frame and positioned

above said support surface, and

laterally from said distribution rollers and said imaginary midline,

each of said paper stop assemblies being

spaced apart from the other, and

located on an opposite side of said imaginary midline, and

having at least one upstanding face for stopping said lateral travel of creased edges of paper distributed away from said midline by said endless belt means;

wherein the improvement comprises means for mounting said upstanding faces of said paper stop assemblies for movement between at least two operative positions,

(a) a first operative position with each of said faces of said paper stop assemblies positioned beneath and laterally adjacent one of said distribution rollers, and

(b) a second operative position with said faces moved laterally from said first position adjacent said distribution rollers in a direction of travel away from said imaginary midline,

such that said continuous form stationery folding apparatus can fold paper in lengths generally equal to or less than the sum of said diameters of said adjacent rollers, said tamping assemblies being positioned laterally out from underneath said distribution rollers when said paper stop assemblies are in said first operative positions.

4,380,449

VARIABLE SIZE FOLDER CYLINDER

Horst B. Michalik, Hochberg, Fed. Rep. of Germany, assignor to Koenig & Bauer AG, Wurzburg, Fed. Rep. of Germany

Filed Jun. 26, 1981, Ser. No. 277,538

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1980, 3028468

Int. Cl.³ B65H *45/16*

U.S. Cl. 493—424 **5 Claims**

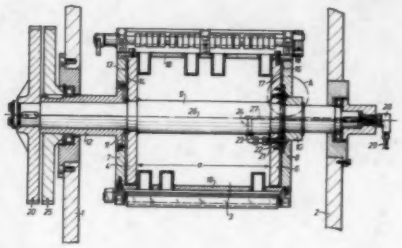
1. A clutch assembly in combination with a folder cylinder of a folder for use in a web-fed rotary printing machine the folder cylinder having an inner pair of supporting wheels and an outer pair of supporting wheels, said inner and outer pairs of supporting wheels being axially spaced from each other on an axial support shaft and being capable of being rotatably displaced with respect to each other about said axial support shaft

to permit variations in the spacing of devices carried by said inner and outer supporting wheels at the periphery of the folder cylinder, said clutch assembly being positioned between and acting on said outer and inner supporting wheels, said clutch assembly comprising:

An axially displaceable ring shaped piston positioned in a recess in a face portion of at least one of the inner supporting wheels;

a coupling ring secured on said ring shaped piston;

a return membrane ring clamped between said ring-shaped piston and said coupling ring, said return membrane ring projecting over said recess in said face portion of said inner supporting wheel, said return membrane ring having an outer rim and an inner rim to seal said recess for said



ring-shaped piston, said outer rim and said inner rim of said return membrane ring being secured to said face of said inner supporting wheel;

a plurality of guide holes formed in said recess for said ring-shaped piston;

a plurality of guide bolts on a side of said ring-shaped piston facing said recess for said ring-shaped piston, said guide bolts engaging said guide holes;

means for supplying a pressurized fluid to said recess for said ring shaped piston; and

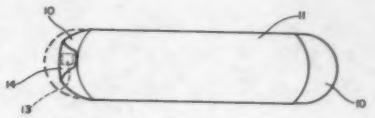
a thrust collar carried by said outer supporting wheel and co-acting with said coupling ring whereby application of fluid pressure causes said coupling ring to engage said thrust collar to join said outer and inner supporting wheels together.

4,380,450

SANITARY NAPKIN WITH DISPOSAL MEANS

Jack W. Reich, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jun. 24, 1981, Ser. No. 276,917
Int. Cl.³ A61F *13/16*
U.S. Cl. 604—386 **2 Claims**



1. A sanitary napkin with a body facing side and a garment facing side comprising a fluid impermeable baffle, an absorbent layer and a fluid pervious wrap positioned between the wearer and the absorbent layer, said wrap and said baffle extending beyond the longitudinal ends of the absorbent layer to form the flexible longitudinal ends of the napkin at least one of said napkin ends containing a discrete adhesive area on the body facing side and having garment attachment adhesive means on the garment facing side.

4,380,451

CONTINUOUS DYEING AND SIMULTANEOUS FINISHING OF TEXTILE MATERIALS USING DEPOAMING AGENT OF POLYOXYALKYLENE POLYSILOXANE COPOLYMER AND HYDROPHOBIC SILICA

Helmut Steinberger, Leverkusen; Wilfried Kortmann, Hagen, and Jürgen Tuschen, Much, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 24, 1981, Ser. No. 305,660

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1980, 3038984

Int. Cl.³ D06P 1/61; D06M 13/00; B01D 19/04

U.S. Cl. 8—477 4 Claims

1. A de-foaming agent comprising by weight about

(a) 80 to 100 parts of a polyoxyalkylenepolysiloxane copolymer of the formula:

$$[R^1Si(OSiR_2)_n]_mZ_{m-1}(OR^2)_{m+2},$$

in which

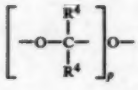
R represents an optionally halogen-substituted alkyl group with up to 4 carbon atoms,

R^1 represents the substituent R or a phenyl radical,

R^2 represents a group of the composition

$$R^3(OCH_2CH_2)_x(OCH_2\underset{\displaystyle CH_3}{\underset{|}{C}}H)_y-,$$

Z represents the difunctional unit —O— or



and

R^3 denotes a hydrocarbon radical with up to 6 carbon atoms;

R^4 denotes independently from one another hydrogen or R^3,

n denotes a number between 3 and 40,

m denotes a number between 1 and 15,

x denotes a number between 0 and 68,

y denotes a number between 0 and 52,

x+y denotes a number between 1 and 68 and

p denotes a number between 2 and 12,

and (b) 0.5 to 20 parts of a hydrophobic silicon dioxide.

4,380,452

DYEING AND PRINTING OF CELLULOSE-CONTAINING TEXTILE MATERIAL

Hermann Loeffler, Speyer; Werner Juenemann, Bad Durkheim, and Gunther Lamm, Hassloch, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 164,005, Jun. 30, 1980, Pat. No. 4,305,718. This application Jul. 29, 1981, Ser. No. 288,209

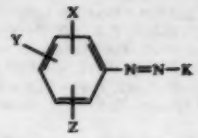
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1979, 2929763

The portion of the term of this patent subsequent to Dec. 15, 1998, has been disclaimed.

Int. Cl.³ C09B 29/36; D06P 3/60

U.S. Cl. 8—532 2 Claims

1. A process for dyeing and printing water-swellable cellulosic materials and blends thereof with synthetic materials in the presence of water and a solvent that is capable of maintaining cellulose in the swollen state, wherein the dye used is a compound of the general formula I:



where K is the radical of a coupling component of the pyridone series,

one of the radicals X, Y and Z is a carboxylic acid ester group of a total of 2 to 19 carbon atoms; and,

the remaining substituents X, Y and Z are hydrogen, methyl, chlorine, bromine or nitro, with the proviso that the number of carbon atoms of the N-substituent in the pyridone moiety plus that of the carboxylic ester group is equal to or above 14.

4,380,453

EXTRANEOUS DYE OR COLORANT SCAVENGING SYSTEM IN LAUNDRY

J. Lyle Claiborne, Hixson, Tenn., assignor to Dixie Yarns, Inc., Chattanooga, Tenn.

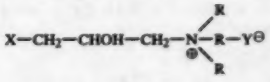
Division of Ser. No. 119,154, Feb. 6, 1980, abandoned. This application Nov. 12, 1980, Ser. No. 206,277

Int. Cl.³ B08B 3/00

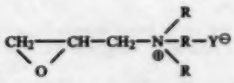
U.S. Cl. 8—606 13 Claims

1. A method of controlling undesirable random dye or colorant in a liquid bath containing sources of undesirable random dye or colorant and textile material of color other than the color of said undesirable dye or colorant, comprising placing in said bath a dye scavenger member comprising a cellulosic substrate material bearing a dye scavenger material, said dye scavenger material comprising a compound from the group consisting of:

a N-trisubstituted ammonium-2-hydroxy-3-halopropyl compound having the general formula



or a salt of epoxy propyl ammonium having the general formula



wherein X is a halogen radical, Y is chloride, bromide, sulfate or sulfonate, and the R's are methyl, ethyl, butyl or benzyl groups or an hydroxyl substituted derivative thereof and then using said liquid bath for its intended purpose, wherein said undesirable random dye or colorant becomes associated with said dye scavenger member.

4,380,454

COKING QUALITY OF COALS WITH INSUFFICIENT COKING PROPERTIES

Jürgen Stadelhofer, Dortmund; Heinz-Gerhard Franck, Bad Soden-Neuenhais; Karl H. Koch, and Rolf Marrett, both of Castrop-Rauxel, all of Fed. Rep. of Germany, assignors to Rütgerswerke Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Nov. 21, 1980, Ser. No. 209,343
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1979, 2951116
Int. Cl.³ C10L *9/10, 5/16*
U.S. Cl. 44—1 B 5 Claims

1. In a process for upgrading the coke quality of coals with insufficient coking properties, the improvement comprising mixing with said coal a coking coal improvement medium which is a pitch-like product with a softening point (Krämer-Sarnow method) of 90°–160° C., and is obtained from the highly aromatic carbonaceous material produced by the disintegration of comminuted coal and/or similar coal-like raw materials with a combination of hydrocarbon mixtures as the solvent which are aromatic residues from the steam pyrolysis of petroleum fractions in combination with coal-derived aromatic mixtures with an average boiling point above 350° as complementary solvent, with the use of elevated temperature and pressure conditions, and by distilling off 2 to 20% of light-boiling components.

5. An additive for the improvement of the coke quality of coals with insufficient coking properties, comprising the pitch-like product with a softening point (Krämer-Sarnow method) of 90°–160° C. which is obtained from the highly aromatic carbonaceous material obtained by the disintegration of comminuted coal and/or similar coal-like raw materials with a combination of hydrocarbon mixtures as the solvent, which are aromatic residues from the steam pyrolysis of petroleum fractions in combination with coal-derived aromatic mixtures with an average boiling point above 350° as complementary solvent, with the use of elevated temperature and pressure conditions, and wherein from 2 to 20% of light-boiling components are distilled off.

4,380,455

DIALKYL CARBONATES AS PHASE SEPARATION INHIBITORS IN LIQUID HYDROCARBON FUEL AND ETHANOL MIXTURES

Harry A. Smith, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 1, 1982, Ser. No. 353,691
Int. Cl.³ C10L *1/18*
U.S. Cl. 44—56 15 Claims

1. A method for preventing a mixture of hydrous ethanol and a liquid hydrocarbon fuel from separating into two phases comprising adding to the mixture an effective amount of a phase separation inhibitor wherein the inhibitor is selected from the group of dialkyl carbonates.

4,380,456

GASOLINE FUEL ADDITIVE COMPOSITION

William H. Taylor, 2311 Marca Pl., Carlesbad, Calif. 92008

Filed Jul. 30, 1981, Ser. No. 288,600
Int. Cl.³ C10L *1/18, 1/30*
U.S. Cl. 44—68 9 Claims

1. An engine fuel composition comprising gasoline and from 0.01 to about 0.1 percent by weight of a composition comprising, in solution:

about 10 to about 35 percent by volume of a zirconium salt of an organic acid;

about 10 to 35 percent by volume of a plasticizer boiling above 300° C. and comprising as a part of its structure an acid derived ester group or an aromatic group, or both;

from 0 to about 6 percent by volume of an organic acid capable of forming a salt with zirconium; and

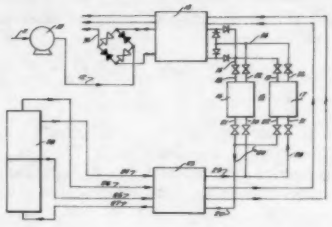
a solvent for said zirconium salt and said plasticizer, comprising a hydrocarbon or a halogenated aliphatic hydrocarbon, or a mixture thereof, as a major component.

4,380,457

SEPARATION OF AIR

Brian A. Rathborne, Northbridge, and Bruce R. Ryan, Woronora, both of Australia, assignors to BOC Limited, Brentford, England

Filed Jun. 1, 1979, Ser. No. 44,826
Claims priority, application Australia, May 25, 1978, PD4508
Int. Cl.³ B01D *53/04*; F25J *3/04*
U.S. Cl. 55—33 4 Claims



1. An air separation process comprising:

(1) passing an air supply under pressure through a passage of a reversing heat exchanger to cool said air to a temperature of about 180° to 230° K. and deposit water in the form of ice in said passage and to form cooled dried air;

(2) contacting said cooled dried air with at least one bed containing an adsorbent material to remove at least a carbon dioxide component therefrom and to form a residue of cooled dried air and component adsorbed material;

(3) further cooling said residue of cooled dried air in a heat exchanger to form cooled rectifiable air;

(4) rectifying said cooled rectifiable air to form separate fractions of product gaseous nitrogen, product gaseous oxygen and waste nitrogen;

(5) treating said component adsorbed material with said waste nitrogen fraction at a pressure less than the pressure of said cooled dried air to regenerate said adsorbent material and to form a residual waste nitrogen fraction; and

(6) passing said residual waste nitrogen fraction through said passage of said reversing heat exchanger in reverse direction to the passing of said air supply to purge said water from said exchanger.

4,380,458

NOVEL DESICCANT

Clayton D. Callihan, Baton Rouge, La., assignor to Louisiana State University, Baton Rouge, La.

Filed Feb. 9, 1981, Ser. No. 232,535
Int. Cl.³ B01D *53/02*
U.S. Cl. 55—33 10 Claims

1. A process for the dehydration of a fluid stream with a desiccant, and regeneration of said desiccant which comprises contacting said fluid stream with a desiccant at a temperature below its syneresis temperature, the syneresis temperature of said desiccant ranging from about 100° F. to about 195° F., said desiccant being characterized as solid methyl cellulose wherein from about 0.6 to about 1.8 of the available hydroxyl groups of the anhydroglucose units constituting the basic cellulose entity have been replaced by methyl and other hydroxy alkyl or carboxy alkyl groups containing from 2 to about 4 carbon atoms where at least one-half of the substituting

groups are methyl, and heating said desiccant above the syneresis temperature, said solid methyl cellulose desiccant having

the capacity to lose its affinity for water, and to release water when heated above its syneresis temperature.

4,380,459

METHOD FOR REDUCING THE AMOUNT OF COAL DUST IN THE ENVIRONMENT SURROUNDING COAL MINING

David I. Netting, Springfield, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Oct. 5, 1981, Ser. No. 308,222
Int. Cl.³ B01D *47/04*; E21C *7/06*
U.S. Cl. 55—87 **3 Claims**

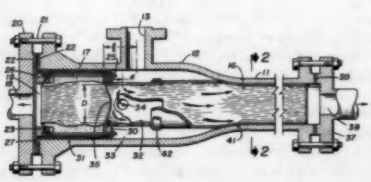
1. In a method of reducing the amount of coal dust in the environment surrounding coal mining, cutting and handling operations by applying a layer of foam developed from an aqueous solution containing a foam generating agent to the surface of the coal, the improvement comprising using as the foam generating agent a mixture comprised of a surfactant and a high molecular weight synthetic gum, said synthetic gum being present in said mixture at a concentration of about 15 to 45 percent based on the total weight of surfactant and said foam generating agent being present in the aqueous solution at a concentration of about 0.01 to about 1 percent based on the total weight of the aqueous solution.

4,380,460

GAS SEPARATION APPARATUS

Roger S. Otstot, and Charles J. Runkle, both of Raleigh, N.C., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 21, 1981, Ser. No. 332,912
Int. Cl.³ B01D *53/22*
U.S. Cl. 55—158 **11 Claims**



1. Apparatus for separating one gas from a mixture of gases, comprising

a. a cylindrical shell having an inlet for admitting a gas mixture into the shell and an outlet for discharge of unpermeated gases from the shell,

b. a bundle of hollow fiber membranes positioned in the shell, said membranes being more permeable to one of the gases of the mixture than the others,

c. a tube sheet positioned in the shell at one end of the bundle of hollow fibers, said fibers extending through the tube sheet, and

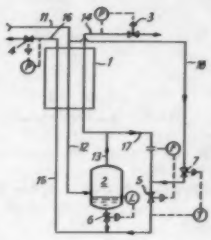
d. a resilient sheet having the form of a slit tube positioned in the shell in a position surrounding the bundle of fibers, one end of said slit tube being secured to the tube sheet, the remainder of said slit tube being free of restraint and expanded into contact with the inner surface of the shell.

4,380,461

RECOVERY OF HYDROGEN FROM AMMONIA SYNTHESIS PURGE GAS

Alan A. Haslam, Stockport; Wieslaw H. Isalski, Sale, and Terence R. Tomlinson, Stockport, all of England, assignors to Petrocarbon Developments Ltd., Manchester, England

Filed Nov. 21, 1980, Ser. No. 208,940
Claims priority, application United Kingdom, May 10, 1979, 7916187
Int. Cl.³ F25J *3/00*
U.S. Cl. 62—11 **6 Claims**



1. In a process for the recovery of hydrogen from purge gas withdrawn from a recycling gas stream of an ammonia synthesis, which process comprises

at superatmospheric pressure cooling the purge gas to subambient temperature to form a condensate comprising components having a boiling point above that of hydrogen and uncondensed gas rich in hydrogen and separating said uncondensed gas from said condensate;

providing refrigeration for said cooling by expanding condensate and passing said expanded condensate and said uncondensed gas separately in indirect countercurrent heat exchange relationship with said purge gas, with evaporation of said expanded condensate; and

lowering the partial pressure of said expanded condensate by withdrawing a bleed stream from said uncondensed gas prior to said heat exchange, expanding said bleed stream and injecting it into said expanded condensate prior to said heat exchange; the improvement wherein the bleed stream contains less than 10% impurities and the minimum temperature of said bleed stream after said expansion thereof is prevented from falling below 77° K.

4,380,462

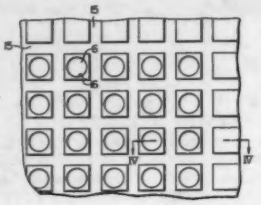
GLASS FIBER APPARATUS AND METHOD

Hiroaki Shono; Toshio Noji, and Shinzo Ishikawa, all of Fukushima, Japan, assignors to Nitto Boseki Co., Ltd., Fukushima, Japan

Continuation of Ser. No. 35,447, May 3, 1979, abandoned. This application Nov. 6, 1980, Ser. No. 204,577
Claims priority, application Japan, May 8, 1978, 53-54192; May 9, 1978, 53-54801
Int. Cl.³ C03B *37/025*
U.S. Cl. 65—1 **12 Claims**

1. A method of forming glass fibers which comprises drawing streams of molten glass through an orifice plate having a large number of orifices arranged in flooding relationship, each of said orifices being provided on a separate projection extend-

ing downwardly from said orifice plate; and directing air upwardly to the undersurface of said orifice plate to cool the



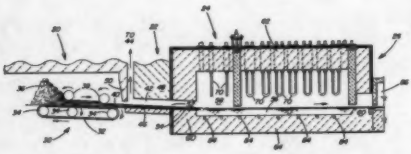
cones of glass formed at each projection, said air impinging upon said orifice plate.

4,380,463

METHOD OF MELTING GLASS MAKING INGREDIENTS

Joseph M. Matesa, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 5, 1981, Ser. No. 308,302
Int. Cl.³ C03B *18/02*
U.S. Cl. 65—99.2 **8 Claims**



1. A method of melting glassmaking ingredients in a glass melting chamber, said glass melting chamber including refractory sidewalls and endwalls forming a container for containing a pool of molten metal therein, comprising the steps of:

feeding a coherent thin sheet of glass batch materials having a width less than the width of said molten metal pool progressively into said glass melting chamber onto the surface of said pool of molten metal;

advancing said coherent thin sheet along said pool of molten metal while maintaining the coherency thereof, and while maintaining the coherent thin sheet in non-contacting relation to the refractory sidewalls;

melting said coherent thin sheet into a layer of molten glass while practicing said advancing step; and

withdrawing said layer of molten glass from said glass melting chamber.

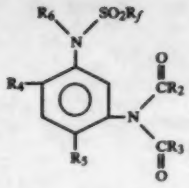
4,380,464

N,N-DIACYLAMINOPERFLUOROALKANESULFONANILIDES AND DERIVATIVES THEREOF

Ezzat A. Mikhail, New Brighton, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 188,535, Sep. 18, 1980, abandoned. This application Feb. 4, 1982, Ser. No. 345,738
Int. Cl.³ C07C *143/83, 143/75;* A01N *41/06*
U.S. Cl. 71—88 **23 Claims**

1. A compound of the formula:



wherein

R_f is lower perfluoroalkyl;

R_2 and R_3 each independently is

(1) a hydrocarbon group selected from alkyl; alkenyl; cycloalkyl; phenyl; and phenyl substituted by up to 3 groups selected from alkyl, alkoxy, alkylthio, mono- or dialkylamino, and halo wherein each alkyl moiety has 1 to 4 carbon atoms;

(2) haloalkyl;

(3) alkoxy; and

(4) a heterocyclic group which can contain only carbon, hydrogen, oxygen, nitrogen, and sulfur, but which must contain at least one ring atom selected from oxygen, nitrogen, and sulfur;

R_4 and R_5 each independently is hydrogen, alkyl, or halo; and

R_6 is hydrogen, alkoxycarbonyl, (alkylthio)carbonyl, (haloalkylthio)carbonyl, haloalkoxycarbonyl, or phenoxycarbonyl;

and agriculturally acceptable salts of the acid form compounds; provided that

R_f contains not more than four carbon atoms,

R_2 and R_3 individually contain not more than nine carbon atoms,

R_4 and R_5 individually contain not more than four carbon atoms, and

R_6 contains not more than twelve carbon atoms.

22. A herbicidal composition which comprises a compound according to claim 1 dispersed in an agriculturally acceptable extending medium.

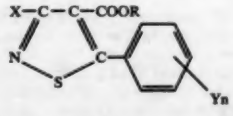
4,380,465

5-ARYL-4-ISOTHIAZOLECARBOXYLIC ACIDS AND DERIVATIVES

Robert K. Howe, Bridgeton, and Len F. Lee, St. Charles, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 33,779, Apr. 27, 1979, abandoned. This application Oct. 17, 1980, Ser. No. 197,833
Int. Cl.³ A01N *43/02, 37/18*
U.S. Cl. 71—90 **9 Claims**

1. A method of safening rice plants against the herbicidal action of butachlor herbicide which comprises treating the rice plant locus with an effective amount of a compound having the formula



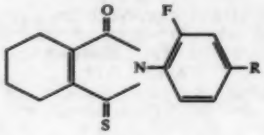
wherein X is hydrogen or chlorine, R is hydrogen, or agriculturally acceptable cations, Y is chlorine or CF_3 and n is 0, 1 or 2.

4,380,466
HEXAHYDROISOINDOLE DERIVATIVES, AND THEIR PRODUCTION AND USE

Yasuo Ishida, Suita, Japan, assignor to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed May 20, 1981, Ser. No. 265,410
Claims priority, application Japan, May 26, 1980, 55-70478
Int. Cl.³ A01N 43/38; C07D 209/46
U.S. Cl. 71—96 10 Claims

1. A compound represented by the formula



wherein R is halogen.

4. A herbicidal composition comprising a herbicidally effective amount of at least one compound of claim 1 in combination with an inert carrier.

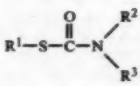
4,380,467
AMINE OXANILIC ACID SALTS AS HERBICIDE EXTENDERS

Rayman Y. Wong, Richmond, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Mar. 12, 1981, Ser. No. 243,008
Int. Cl.³ A01N 37/00, 37/10
U.S. Cl. 71—100 14 Claims

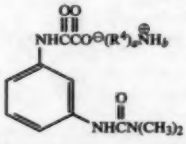
1. An herbicidal composition of extended soil life consisting essentially of

(a) an herbicidally effective amount of a thiolcarbamate having the formula



in which R^1, R^2, and R^3 are independently C_2-C_4 alkyl; and

(b) an amount of an amine oxanilic acid salt sufficient to extend the soil life of said thiolcarbamate, said salt having the formula



in which R^4 is selected from the group consisting of C_1-C_6 alkyl, C_2-C_6 alkenyl, phenyl, and benzyl, and a and b are both integers from zero to four such that the sum of a and b is four.

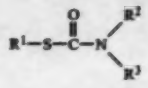
4,380,468
ISONITRILES AS HERBICIDE EXTENDERS

Raymond A. Felix, Richmond, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 196,226, Oct. 14, 1980, abandoned. This application Oct. 2, 1981, Ser. No. 307,922
Int. Cl.³ A01N 37/00
U.S. Cl. 71—100 20 Claims

1. An herbicidal composition comprising

(a) an herbicidally effective amount of a thiolcarbamate having the formula



in which

R^1, R^2, and R^3 are independently C_2-C_4 alkyl; and

(b) an amount of a substituted phenyl isonitrile sufficient to extend the soil life of said thiolcarbamate, said isonitrile having the formula

in which

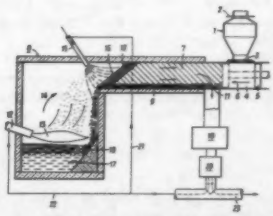
R^4 is selected from the group consisting of C_1-C_6 alkyl, C_1-C_6 alkoxy, C_1-C_6 alkylthio, phenyl, halogen, benzylthio, and p-chlorobenzylthio, and

R^5 is selected from the group consisting of hydrogen, C_1-C_6 alkyl, C_1-C_6 alkoxy, and halogen.

4,380,469
PROCESS AND APPARATUS FOR CONTINUOUSLY REDUCING AND MELTING METAL OXIDES AND/OR PRE-REDUCED METALLIC MATERIALS

Horst Sulzbacher, Dirnböckweg, Austria, assignor to Voest-Alpine Aktiengesellschaft, Vienna, Austria

PCT No. PCT/AT80/00036, § 371 Date Aug. 12, 1981, § 102(e) Date Aug. 12, 1981, PCT Pub. No. WO81/01715, PCT Pub. Date Jun. 25, 1981
PCT Filed Dec. 17, 1980, Ser. No. 293,209
Claims priority, application Austria, Dec. 18, 1979, 7981/79
Int. Cl.³ C21C 7/00
U.S. Cl. 75—38 9 Claims



1. A process for continuously reducing and melting solid materials containing metal oxides comprising: continuously supplying a charge of the material to a melting receptacle; heating the supplied charge to a temperature above its melting temperature in the melting receptacle by means of a burner which effects combustion within the receptacle of a fuel which upon combustion produces effluent gas containing essentially carbon dioxide and water vapor at a temperature sufficiently high that the effluent gas can react with carbon; supplying carbon in particulate form to the hot effluent gas thereby forming carbon monoxide and hydrogen by reaction of the carbon with the carbon dioxide and with the water vapor; passing the product gas resulting from the reaction at a temperature exceeding 800° C. in countercurrent flow with the charge of material being supplied to the melting receptacle in a manner to heat the charge of material and to cool the product gas to a temperature exceeding 100° C.

4,380,470

DUCTILE TRANSPLUTONIUM METAL ALLOYS

William V. Conner, Boulder, Colo., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 9, 1981, Ser. No. 310,248
Int. Cl.³ C22C 28/00, 43/00
U.S. Cl. 75—122.7 14 Claims

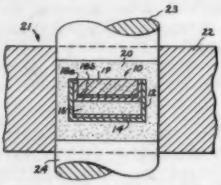
1. An alloy consisting essentially of 1 to 99 wt. % of Ce and 99 to 1 wt. % of Am, Cm, Bk or Cf.

4,380,471

POLYCRYSTALLINE DIAMOND AND CEMENTED CARBIDE SUBSTRATE AND SYNTHESIZING PROCESS THEREFOR

Minyoung Lee, Schenectady; Lawrence E. Szala, Scotia, and Roy E. Tuft, Guilderland Center, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 5, 1981, Ser. No. 222,812
Int. Cl.³ B22F 3/14, 7/00; C04B 31/16
U.S. Cl. 419—11 11 Claims



1. A process for simultaneously cementing diamond particles together and affixing the cemented diamond particles to a substrate comprising the steps of:

(a) disposing within a refractory metal container a mass of silicon atom-containing metal, a quantity of diamond powder, a cemented carbide body and a layer made of a barrier material selected from the group consisting of tantalum, vanadium, molybdenum, zirconium, tungsten and alloys thereof, said layer of barrier material being disposed between said cemented carbide and at least a portion of said quantity of diamond powder and said quantity of diamond powder being disposed between said silicon atom-containing metal and said cemented carbide body to form an assembly, and

(b) simultaneously applying heat and pressure to said assembly to melt said silicon atom-containing metal and cause said molten metal to infiltrate the diamond powder adjacent thereto and make contact with said layer of barrier material.

4,380,472

METHOD FOR PRODUCING PRESSURE PLATES USED IN HYDRAULIC PUMPS

Minoru Kawabata; Susumu Honaga, both of Aichi, and Kenji Takahashi, Kariya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Nov. 6, 1980, Ser. No. 204,719
Claims priority, application Japan, Nov. 13, 1979, 54/147352
Int. Cl.³ B22F 7/00
U.S. Cl. 419—9 5 Claims

1. A method for producing a pressure plate used in a hydraulic pump by fluid-tightly connecting first and second plate sections together, utilizing a ring member having a hole formed therein wherein said first plate section has at least one bore formed therein and said second plate section has at least one port formed therein, which comprises:

pressing metal powders so as to form said first and second plate sections and said ring member into predetermined configurations;

setting said first and second plate sections in place and inserting said ring member in said at least one bore formed in said first plate section so as to provide a fluid port in cooperation with said at least one port formed in said second plate section;

placing brazing metal along an upper side diameter of said at least one bore; and

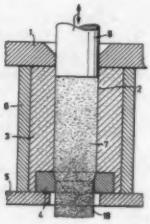
heating said first and second plate sections and said ring member so as to be fluid-tightly connected together by said brazing metal and simultaneously sintering the same.

4,380,473

APPARATUS FOR THE CONTINUOUS EXTRUSION OF ELECTRICALLY CONDUCTIVE GRANULATED MATERIALS, PREFERABLY POWDER METALLURGY MATERIALS

Klaus Lichtinghagen, Kirchhain, Fed. Rep. of Germany, assignor to Glacier GmbH-DEVA Werke, Stadtallendorf, Fed. Rep. of Germany

Filed Jan. 24, 1980, Ser. No. 115,082
Claims priority, application Fed. Rep. of Germany, Jan. 30, 1979, 2903510
Int. Cl.³ B22F 3/00
U.S. Cl. 419—41 11 Claims



1. A process for the continuous extrusion of electrically conductive granulated material, preferably powder metallurgy material, into a strand utilizing a die having a die passage duct, a nozzle, and a punch, which comprises:

introducing said material into said die;

compressing said material with a plurality of compression strokes of said punch in said die passage duct against a frictional resistance which is built up by successive strokes of said punch to form a precompressed section of said strand;

introducing an additional quantity of said material into said die between each of said plurality of compression strokes;

advancing said material by the pressure of said plurality of compression strokes in said duct;

extruding said material through said nozzle;

sintering said material by means of a current directed through the longitudinal direction of said strand to heat all said material situated in said die passage duct between said punch and said nozzle; and

applying a voltage from 2 to 5 volts exclusively to said material with said nozzle and said punch so as to produce said current directed through said strand situated in said die passage duct.

4,380,474

POLYISOCYANATE REACTION PRODUCTS

Gheorghe Cioca, Coatesville, Pa., and Paul A. Fertell, Wilmington, N.J., assignors to Seton Company, Newark, N.J.

Continuation-in-part of Ser. No. 211,636, Dec. 1, 1980, abandoned. This application Nov. 3, 1981, Ser. No. 317,171
Int. Cl.³ C08L 89/06
U.S. Cl. 106—155 11 Claims

1. An article of manufacture comprising: a homogeneous admixture of chrome shavings and a polyisocyanate binder formed into a sheet.

4,380,475

PROCESS FOR PREPARING AQUEOUS DISPERSION OF ROSIN-BASE MATERIALS

Kimio Kawatani, Suita; Shigenori Tsujimoto, Hashimoto, and Ryoji Kaji, Kawachinagano, all of Japan, assignors to Arakawa Kagaku Kogyo Kabushiki Kaisha, Japan

Filed Jul. 29, 1981, Ser. No. 288,156
Claims priority, application Japan, Aug. 6, 1980, 55-108625
Int. Cl.³ C08L 93/04
U.S. Cl. 106—238 5 Claims

1. A process for preparing an aqueous dispersion of a rosin-base material by mixing together a melt of the rosin-base material, a dispersant and water to obtain a dispersion comprising a continuous phase of the rosin-base material and a dispersed phase of the water, and adding water to the dispersion to invert the dispersion to the contemplated aqueous dispersion comprising a dispersed phase of the rosin-base material and a continuous phase of the water, the process being characterized in that the dispersant is at least one of compounds represented by the formula

(I)

wherein R is hydrogen atom or lower alkyl group, A is straight-chain or branched-chain alkylene group having 2 or 3 carbon atoms, n is an integer of 4 to 25, one of X and Y is —SO_3M and the other thereof is hydrogen atom, and M is a monovalent cation, and is present in an amount of about 0.5 to about 10% by weight of the rosin-base material.

4,380,476

PROCESS FOR THE PREPARATION OF 4,1′,6′-TRICHLORO-4,1′,6′-TRIDEOXYGALACTOSUCROSE (TGS)

Khizar S. Mufti, Reading, and Riaz A. Khan, Sonning, both of England, assignors to Talres Development (N.A.) N.V., Netherlands Antilles

Filed Jun. 19, 1981, Ser. No. 275,593
Claims priority, application United Kingdom, Jul. 8, 1980, 8022320
Int. Cl.³ C07H 5/02, 1/06
U.S. Cl. 127—46.3 14 Claims

1. A process for the preparation of 4,1′,6′-trichloro-4,1′,6′-trideoxygalactosucrose (TGS) comprising the steps of:

(a) reacting sucrose with an acylating reagent under conditions to provide a mixture of acylated sucrose derivatives containing a major proportion of 6-monoacylated material;

(b) reacting the monoacylated sucrose derivative with a chlorinating reagent capable of chlorinating at positions 1′,4 and 6′ of a sucrose 6-acylate; and

(c) deacylating and separating the 4,1′,6′-trichloro-4,1′,6′-trideoxygalactosucrose material formed.

4,380,477

CLEANING PIPES USING MIXTURES OF LIQUID AND ABRASIVE PARTICLES

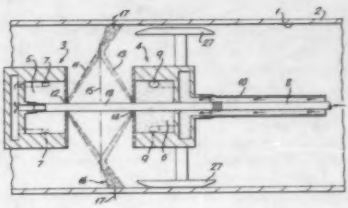
David H. Saunders, Cranfield, England, assignor to National Research Development Corporation, London, England

Filed Nov. 6, 1980, Ser. No. 204,720
Claims priority, application United Kingdom, Nov. 9, 1979, 7938982
Int. Cl.³ B08B 9/02
U.S. Cl. 134—7 13 Claims

10. A method of cleaning pipes comprising:

using a first vortex-generating nozzle to produce a high-pressure first jet of liquid in substantially conical sheet form, the axis of said cone being substantially coincident with that of said pipe;

said nozzle comprising a chamber formed about a first axis and including tangential inlet means for directing high-pressure liquid into tangential contact with an interior surface of said chamber, said surface being of a configuration to cause said liquid to swirl within said chamber, and an axially-facing outlet nozzle through which said liquid is discharged from said chamber as a first jet of liquid in sheet form and in the form of a hollow cone;



generating a second jet containing abrasive particles, said second jet being of generated form coaxial with said first jet;

causing said first and second jets to intersect to form a resultant jet, containing both liquid and abrasive particles and of substantially conical form, also coaxial with said pipe;

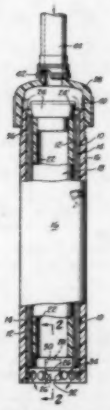
causing said resultant jet both to strike the inner wall of said pipe around its entire periphery and to move axially within said pipe, whereby to clean said inner wall of said pipe.

4,380,478

APPARATUS AND METHOD FOR CLEANING PAINT ROLLER COVERS

James J. Cooney, 763 Sapphire St., San Diego, Calif. 92109

Filed Oct. 5, 1981, Ser. No. 308,369
Int. Cl.³ B08B 3/04
U.S. Cl. 134—38 20 Claims



15. The method of cleaning a cylindrical paint roller cover of the type having a surrounding outer annular layer of absorbent material and an axial tubular passage, which comprises the steps of:

longitudinally confining the roller cover between outer and

inner walls of an annular open ended longitudinally extending passage formed in a piston-like member;

substantially filling a cylindrical container member having an open end with a cleaning liquid;

inserting an end of the piston-like member into sealing piston-cylinder relation with the open end of the container; and

thereafter manually axially moving one of said piston-like member and said container relative to the other in a direction to force cleaning liquid in the container through the annular layer of the cover.

4,380,479

FOILS OF BRITTLE ALLOYS

Brian C. Coad, San Francisco, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Filed Dec. 21, 1981, Ser. No. 332,430
Int. Cl.³ B22F 7/04
U.S. Cl. 148—11.5 P **5 Claims**

1. A process for making a nickel-base brazing foil containing nickel and other elements in a predetermined metallurgical content said process comprising

(a) forming a relatively uniform powder blend containing nickel and said other elements,

(b) depositing said blend relatively uniformly on a nickel strip, and

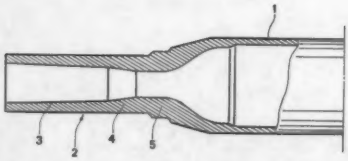
(c) passing said blend and said strip through the rolls of a rolling mill to achieve at least about 3% elongation of the nickel strip to form a foil of said predetermined metallurgical context.

4,380,480

METHOD OF MAKING ONE-PIECE TUBULAR AXLE BLANKS AND THE PRODUCED AXLE BLANKS

Jean-Jacques Delfino, Montmorency, and Maurice Prevot, Avesnes S/Elpe, both of France, assignors to Vallourec, Paris, France

Filed Dec. 21, 1981, Ser. No. 332,375
Claims priority, application France, Jan. 20, 1981, 81 00976
Int. Cl.³ C21D 9/08
U.S. Cl. 148—12.4 **12 Claims**



1. Method of making one-piece tubular wheel axle blanks composed of a center portion having journals at both ends, wherein a preheated steel tube is subjected to quenching particularly in water over its whole length followed by tempering, the tube ends being then swaged while the transition area between the center portion and the journal is, moreover, thickened by upsetting, whereupon both ends of the axle blank are locally heat treated by annealing.

4,380,481

METHOD FOR FABRICATING SEMICONDUCTOR DEVICES

Masafumi Shimbo, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Japan

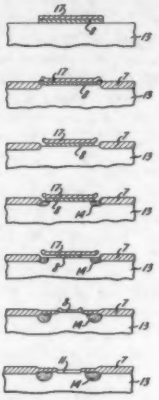
Filed Mar. 17, 1981, Ser. No. 244,793
Claims priority, application Japan, Mar. 27, 1980, 55/39463
Int. Cl.³ H01L 21/273
U.S. Cl. 148—187 **7 Claims**

1. A method for fabricating a semiconductor device, comprising the steps of:

forming a multi-insulation layer composed of at least two kinds of materials including an anti-oxidation substance and an oxide on a semiconductor surface region of low impurity density in the form of an island;

forming a first selective oxidation film on the surface of said low impurity density region by using at least one layer of said multi-insulation layer as a mask;

defining a first window with a width determined by at least one side face of said multi-layer which has been subjected to side etching and an end portion of said first selective oxidation film and forming a first region of high impurity density in said semiconductor surface along the periphery



of said island-like multi-insulation layer by selectively diffusing an impurity;

forming the anti-oxidation insulation layer of said multi-insulation layer so as to reduce the size thereof after an insulation layer which is not a most upper layer and which is at least one layer of said multi-insulation layer is subjected to a second side etching and carrying out selective oxidation; and

forming a second region of high impurity density in the inside of said first region after removing said multi-insulation layer and defining a window.

4,380,482

STABILIZATION OF WATER-BEARING EXPLOSIVES HAVING A THICKENED CONTINUOUS AQUEOUS PHASE

Lionel S. Sandell, Hagerstown, Md., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 16, 1981, Ser. No. 225,725
Int. Cl.³ C06B 45/02
U.S. Cl. 149—21 **26 Claims**

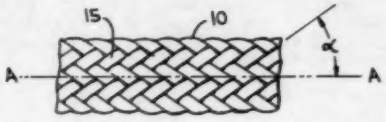
1. A method of stabilizing the thickened or gelled structure of a water-bearing explosive comprising oxidizer, fuel, and sensitizer components in a thickened or gelled continuous aqueous phase, said method comprising incorporating in the explosive a thermally stabilizing amount of iodide ion, iodate ion, or a combination of iodide and iodate ions.

4,380,483

PROCESS FOR FORMING IMPROVED CARBON FIBER REINFORCED COMPOSITE COIL SPRING

Howard S. Kliger, Edison, N.J., assignor to Celanese Corporation, New York, N.Y.

Division of Ser. No. 3,671, Jan. 15, 1979, Pat. No. 4,260,143. This application Sep. 24, 1980, Ser. No. 190,339
Int. Cl.³ B65H *81/00*; F16F *1/04*
U.S. Cl. 156—169 12 Claims



1. A method for forming a carbon fiber reinforced composite coil spring comprising:

(a) impregnating a carbon fiber braid wherein said carbon fibers are oriented at an angle in the range of approximately plus or minus 30° to plus or minus 60° to the braid axis and wherein there is incorporated into said braid a quantity of longitudinal reinforcing fibers which are oriented longitudinally to the braid axis so as to minimize change in said angle of said carbon fibers within said braid when placed under tension with a quantity of non-solidified resin to serve as a substantially continuous matrix material;

(b) winding said impregnated braid in multiple layers while under longitudinal tension within a groove which extends helically along the surface of a cylindrical mandrel to provide the coil configuration of said carbon fiber reinforced composite coil spring;

(c) solidifying the resinuous matrix material of the composite spring while maintaining said longitudinal tension; and

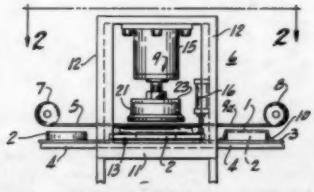
(d) removing said solid spring from said mandrel.

4,380,484

INDUCTIVELY HEATED TOOLING AND METHOD FOR WORKING PLASTIC MEMBERS

Clyde P. Repik, and Alfred F. Lestherman, both of Columbus, Ohio, assignors to William C. Heller, Jr., Milwaukee, Wis.

Filed Feb. 20, 1981, Ser. No. 234,517
Int. Cl.³ B32B *31/18*
U.S. Cl. 156—251 30 Claims



1. An inductively heated apparatus for working plastic material, comprising

a tool unit having a tool element formed of a material responsive to a selected energy field to generate heat in the tool element,

a heat source coupling unit mounted adjacent the tool element and generating said energy field coupled to said tool element to create heat within the tool element and thereby raise the temperature of said tool element to the fusion temperature of the plastic, and

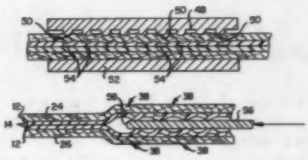
a cooling means thermally coupled to said tool element to establish selective forced cooling of the tool element.

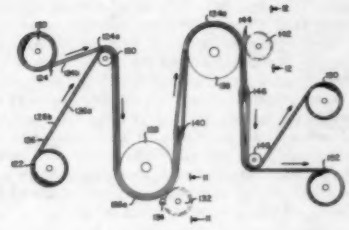
4,380,485

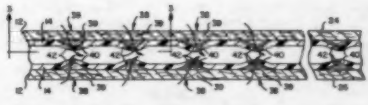
METHOD OF MAKING BREATHABLE RECEPTACLES

Samuel J. Schuster, 617 Vallombrosa, Pasadena, Calif. 91107

Continuation-in-part of Ser. No. 55,160, Jul. 6, 1979, abandoned, which is a division of Ser. No. 955,221, Oct. 27, 1978, abandoned. This application Oct. 14, 1980, Ser. No. 196,824
Int. Cl.³ B32B *31/00, 3/00*; B26F *15/28*
U.S. Cl. 156—254 6 Claims







1. A method of making a breathable receptacle for storing an article in sterile condition, the receptacle being constructed of a laminate comprising a layer of paper or the like impermeable to microorganisms but highly permeable to sterilizing vapor and a layer of thermpolastic, polymeric material, the strength of a heat seal bond between layers of the polymeric material being initially greater than the delamination resistance of the laminate, the method including the steps of:

superimposing first and second sheets of said laminate with the polymeric layers in confronting relation;

heat sealing the polymeric layers of said sheets together at a plurality of small areas;

separating the sheets thereby rupturing the polymeric layer of at least one of the sheets at the positions of the small areas; and

joining the sheets together to define the receptacle.

4,380,486

MACHINE INSTALLATION FOR THE PRODUCTION OF THICK-WALLED INSULATING PIPES OF FOAM SYNTHETIC RESIN SHEETS

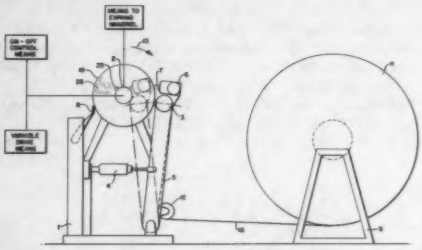
Johann Fortsch, Goldbach; Cosmas Lorry, Niederkassel, and Gustav Schweiger, Kleinostheim, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Jan. 29, 1981, Ser. No. 229,756

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1980, 8002596[U]

Int. Cl.³ B32B *31/22*

U.S. Cl. 156—359 8 Claims



1. A machine installation for the manufacture of a thick-walled insulating pipe of elastic, laminatable foamed synthetic resin sheet material, which comprises an apparatus for the lamination of the foamed synthetic resin sheet material during winding of the sheet material on a mandrel to form a multilayer insulating pipe having a length corresponding to the sheet width of the sheet of foam material, said apparatus comprising an expandable and rotatable mandrel equipped with a pneumatic tensioning means and an infinitely variable drive mechanism for rotating the mandrel to wrap the sheet material thereon, and a pressure roller which can be urged against the mandrel, this roller being movable pneumatically by means of a telescopic holder, the mandrel being associated with a pivotably mounted burner means for flame laminating the wraps of the sheet of foam material together to form a laminated sheet pipe product and a cutter for separating the pipe product from the non-laminated sheet material, and a means for finishing the initially formed pipe product comprising a shaft rotatable in timed segments with clamping jaws being capable of receiving an unfinished insulating pipe product and being opened and closed pneumatically, wherein one holding arm is associated with a band cutter for trimming the end faces of the insulating pipe product, and a further holding arm is associated with a blade for slitting the insulating pipe along its length.

4,380,487

METHOD AND APPARATUS FOR CHANGING THE LABEL MAGAZINE BOXES OF LABELING MACHINES

Rudolf Zodrow, Dusseldorf, Fed. Rep. of Germany, assignor to Jagenberg Werke, Dusseldorf, Fed. Rep. of Germany

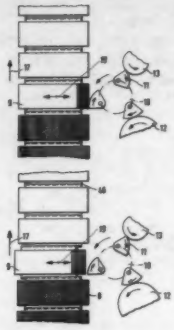
Filed Jan. 22, 1981, Ser. No. 227,551

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1980, 3002250

Int. Cl.³ B65C *9/10, 9/16*

U.S. Cl. 156—568 9 Claims

1. In a labelling machine having means for feeding articles to be labelled, a label supply, label pick up means for picking up a label from the supply, means for applying the the machine, and means for replacing the label supply when exhausted, the improvement wherein said label supply comprises at least three label boxes disposed alongside one another at the pickup point so as to be successively displaceable in one direction, the label boxes being releasably joined to one another by a dovetailed joint formed along their side walls, and the means for replacing the label supply when exhausted comprises guide means for the boxes so as to permit them to move together transversely to the direction in which labels are stacked in the boxes, and means



permitting retracting and advancing in label stacking direction of that label box which is in active position.

4,380,488

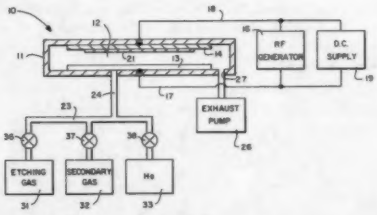
PROCESS AND GAS MIXTURE FOR ETCHING ALUMINUM

Richard F. Reichelderfer, Castro Valley; Diane C. Vogel, Union City, and Marian C. Tang, Hercules, all of Calif., assignors to Branson International Plasma Corporation, Hayward, Calif.

Continuation-in-part of Ser. No. 196,616, Oct. 14, 1980, abandoned. This application Nov. 2, 1981, Ser. No. 317,582

Int. Cl.³ C23F *1/02*

U.S. Cl. 156—643 11 Claims



1. In a process for etching aluminum in a reactor having a chamber and a pair of spaced apart generally planar electrodes, the steps of: positioning the aluminium between the electrodes in the reactor chamber, admitting a primary etching gas mixture selected from the group consisting of BCl_3 and chlorine, CCl_4 and chlorine, and combinations thereof to the chamber at a pressure on the order of 140–450 microns, admitting a secondary gas selected from the group consisting of $SiCl_4$, $CHCl_3$, CCl_4 and combinations thereof to the chamber at a pressure on the order of 190–300 microns to control the anisotropic character of the etch, said primary gas mixture and the secondary gas being present in the chamber at the same time, and energizing the electrodes to ionize the gas and form active species between the electrodes.

4,380,489

METHOD OF PRODUCING POLYSILICON STRUCTURE IN THE 1 μM RANGE ON SUBSTRATES CONTAINING INTEGRATED SEMICONDUCTOR CIRCUITS BY PLASMA ETCHING

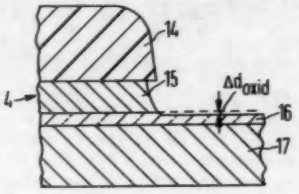
Willy Beinvogl, Munich, and Barbara Hasler, Stockdorf, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 21, 1982, Ser. No. 341,485

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1981, 3103177

Int. Cl.³ H01L *21/306*

U.S. Cl. 156—643 6 Claims



1. In a method of producing polysilicon structures down to a 1 μm range on substrates containing integrated semiconductor circuits by plasma etching in a plate reactor with a reactive gas mixture composed of SF_6 and an inert gas wherein a substrate to be etched is provided with a 3-layered structure defined by a layer of silicon dioxide positioned directly on said substrate, a layer of polysilicon positioned on said silicon dioxide layer and a resist mask positioned on said polysilicon layer, and said substrate is positioned on a grounded electrode, the improvement comprising:

adjusting the high frequency power for the plate reactor to values smaller than 0.1 watts/cm^2;

adjusting the gas pressure of the reactive gas mixture in the reactor to values in the range from 60 through 120 Pa;

adjusting the temperature of the electrode in the plate reactor to values in the range from 20° through 60° C.; and

etching said substrate while maintaining the above conditions for a period of time sufficient to attain desired polysilicon structures.

4,380,490

METHOD OF PREPARING SEMICONDUCTOR SURFACES

David E. Aspnes, Watchung, and Ambrose A. Studna, Raritan, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 27, 1981, Ser. No. 248,549

Int. Cl.³ C03C *15/00*; H01L *21/306*; C03C *25/06*

U.S. Cl. 156—662 9 Claims

1. A method of treating a semiconductor surface comprising the steps pretreating said surface, said semiconductor being selected from the group consisting of Si, Ge, Ga-Group V compounds, and In-Group V compounds, chemomechanically polishing said surface with a mixture of a halogen and an organic solvent, said mixture consists essentially of bromine and methanol, said polishing step comprises diluting said bromine-methanol mixture from 0.05 volume percent bromine to pure methanol, and stripping residual layers.

4,380,491

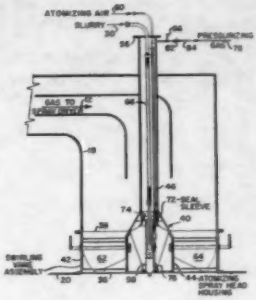
SPRAY NOZZLE ASSEMBLY FOR SPRAY DRYER

Ira L. Joy, Alabaster, and Neal B. Humphreys, Odenville, both of Ala., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Aug. 26, 1981, Ser. No. 296,384

Int. Cl.³ B01D *1/16*

U.S. Cl. 159—4 B 5 Claims



1. In a spray dryer apparatus having a housing defining a spray drying chamber wherein a slurry is dried by contact with a hot drying gas, a drying gas supply duct having an outlet in flow communication with said drying chamber through a gas inlet opening in the roof of said housing, and a spray head assembly of the type having an annular swirler vane assembly disposed about the gas inlet in the roof of said spray dryer housing intermediate the outlet of the drying gas supply duct and the top of said spray dryer housing thereby defining an annular flow passageway through which the drying gas passes from the outlet of the drying gas supply duct into the spray drying chamber, an atomizing spray head housing disposed coaxially within the center of said annular swirler vane assembly, said atomizing spray head housing having a floor with a central opening therein and a flange at its upper end, and an atomizing spray head disposed at the central opening in the floor of said atomizing spray head housing and having tip means extending through the central opening for introducing the slurry to be dried into said drying chamber; an improved means for releasably supporting the spray head within said housing in sealed relationship therewith comprising:

a. an elongated guide tube having a conical outwardly-flared flange at its lower end adapted to mate with the flange of said atomizing spray head housing and extending upwardly through the drying gas supply duct to terminate in a capped upper end disposed externally of the drying gas supply duct;

b. an elongated seal sleeve mounted to and extending downward from said guide tube at the point near where the lower end of said guide tube flares outwardly, said seal sleeve forming an extension of the tubular portion of said guide tube into the interior space of the outwardly-flared flange thereof;

c. a support tube extending upwardly from said atomizing spray head into said seal sleeve, said support tube being slidably translatable within said seal sleeve and said guide tube so as to permit said support tube and the atomizing spray head attached thereto to be withdrawn upwardly through the guide tube to a location exterior of the drying gas supply duct;

d. means passing through said guide tube for supplying slurry to said spray head;

e. first seal means disposed between said support tube and said seal sleeve for providing a gas tight seal between the interior of said guide tube and the interior of said atomizing spray head housing; and

f. second seal means disposed at the lower end of said spray

head for providing a gas tight seal between the interior of said atomizing spray head housing and said spray drying chamber.

4,380,492

METHOD OF USING A CHISEL FOR A CRUST BREAKING FACILITY

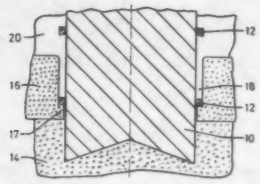
Edwin Gut, Steg; Erwin Arnold, Venthone, and Hans Friedli, Steg, all of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Continuation of Ser. No. 184,343, Sep. 5, 1980, Pat. No. 4,317,595. This application Nov. 19, 1981, Ser. No. 323,021

Claims priority, application Switzerland, Sep. 10, 1979, 8151/79

Int. Cl.³ C25C *3/06, 3/14, 15/08*

U.S. Cl. 204—67 **11 Claims**



1. Process for breaking the solidified crust on an electrolytic cell by operating a crust breaker fitted with a chisel which comprises providing a chisel having a cross-sectional dimension and having a vertical sidewall with at least one small, substantially horizontally extending projection in the lower region of the vertical sidewall, wherein all surfaces of said projections extend outwardly substantially less than said cross-sectional dimension, penetrating the crust with said chisel, lowering said chisel further at least until the lowest projection or projections reaches the lower half of the crust to enable continuous operation without jamming, without projection deformation and with reduced force.

4,380,493

ANODE

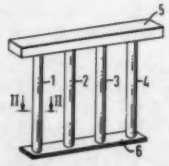
John P. A. Wortley, Brookwell, and John Woolner, Sutton Coldfield, both of England, assignors to IMI Kynoch Limited, Birmingham, England

Filed Nov. 10, 1981, Ser. No. 320,121

Claims priority, application United Kingdom, Nov. 21, 1980, 8037450

Int. Cl.³ C25C *1/10*; C25B *11/04, 11/10*

U.S. Cl. 204—105 M **11 Claims**



1. An anode for an electrowinning cell comprising a plurality of lead or lead alloy rods, characterised in that the rods are reinforced with a core of titanium or of a plastics material inert to the conditions surrounding, in use, the anode, and having a greater tensile strength than the lead or lead alloy of the rods.

4,380,494

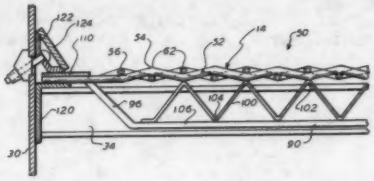
VIBRATING SCREEN WITH SELF-SUPPORTING SCREEN CLOTH

Albert Wilson, Columbia, S.C., assignor to Litton Systems, Inc., Columbia, S.C.

Continuation of Ser. No. 139,804, Apr. 14, 1980, abandoned. This application Apr. 15, 1981, Ser. No. 254,545

Int. Cl.³ B07B *1/48*

U.S. Cl. 209—319 **29 Claims**



1. A screen panel for use in a vibrating screen; comprising:

(a) screen cloth means formed from a plurality of rod-like members woven together to form a screen with openings of predetermined size and configuration; and

(b) truss-like support means arranged beneath and secured to the underside of said screen cloth means;

(c) said truss-like support means including at least one truss-like support assembly disposed beneath and secured to said under surface of said screen cloth means; said truss-like support assembly; comprising:

(i) a support rod having a major portion thereof spaced from said under surface of said screen cloth means, and further having ends directed towards said screen cloth means, so that extremities of said ends lie in a common plane with and proximate to ends of said rod-like members forming said screen cloth means;

(ii) means securing said extremities of said ends of said support rod to said ends of said rod-like members;

(iii) support wire means formed into a substantially sinusoidal configuration with tips thereof spaced to fill the space between said under surface of said screen cloth means and a predetermined surface of said support rod; and

(iv) means securing said support wire means in said space between said screen cloth means and said support rod.

4,380,495

METHOD OF TREATING SPRAY PAINT COLLECTION WATER IN PAINT SPRAY BOOTHS AND COMPOSITION THEREFOR

Donald R. Maher, 130 Northdale Dr., Toledo, Ohio 43612

Filed Dec. 16, 1981, Ser. No. 331,185

Int. Cl.³ C08L *5/00*; C02F *1/56*

U.S. Cl. 210—728 **10 Claims**

9. The method of removing paint overspray particles from a circulating water system employed in paint spray booths, that method comprising the addition to the water system of an aqueous concentrate of Kaolin clay, liquid gum Karaya and water; said clay and water being in the form of a slurry concentrate added to the water system; said concentrate converting paint particles to a spongy filterable mass.

4,380,496

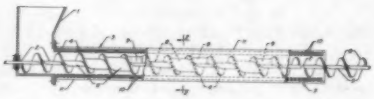
MECHANICAL DEWATERING PROCESS UTILIZING A NONUNIFORM SCREW CONVEYOR

Vere Maffet, West Chester, Pa., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 22,910, Mar. 22, 1979, Pat. No. 4,237,618, Ser. No. 22,914, Mar. 22, 1979, Pat. No. 4,214,377, Ser. No. 75,575, Sep. 14, 1979, abandoned, and Ser. No. 92,381, Nov. 8, 1979, abandoned, said Ser. No. 22,910, and Ser. No. 22,914, each is a continuation-in-part of Ser. No. 891,437, Mar. 29, 1978, Pat. No. 4,160,732, and Ser. No. 909,587, May 25, 1978, Pat. No. 4,193,206, which is a continuation-in-part of Ser. No. 777,673, Mar. 8, 1977, Pat. No. 4,128,946, Ser. No. 813,577, Jul. 7, 1977, Pat. No. 4,098,006, Ser. No. 813,578, Jul. 7, 1977, Pat. No. 4,099,336, Ser. No. 844,097, Oct. 20, 1977, Pat. No. 4,121,349, Ser. No. 858,879, Dec. 8, 1977, Pat. No. 4,161,825, and Ser. No. 891,437, , which is a continuation-in-part of Ser. No. 813,577, , said Ser. No. 858,879, is a continuation-in-part of Ser. No. 813,577, , and Ser. No. 813,578, , said Ser. No. 844,097, is a continuation-in-part of Ser. No. 813,578, , said Ser. No. 813,577, and Ser. No. 813,578, each is a continuation-in-part of Ser. No. 777,673,. This application May 23, 1980, Ser. No. 152,944

Int. Cl.³ C02F 11/12

U.S. Cl. 210—780 6 Claims



1. A mechanical dewatering process which comprises the steps of:

(a) passing a feed stream which comprises sewage sludge or peat and which comprises 50 wt.% water into a first end of a mechanical dewatering zone which comprises a first screw conveyor which is at least partially contained within a cylindrical porous wall concentric with the first screw conveyor, with the cylindrical porous wall having an inner surface and uniformly distributed openings having a minimum cross-sectional distance between about 0.00125 cm. and about 0.025 cm., and with the first screw conveyor comprising a helical blade mounted on a central shaft, the helical blade having an outer edge which is separated from the inner surface of the cylindrical porous wall by a distance of from about 0.08 cm. to about 5.0 cm., and with the central shaft having at least two built-up sections within the cylindrical porous wall along which the flight depth of the first screw conveyor gradually decreases due to an increase in the diameter of the central shaft to provide a compression ratio above 2.5:1.0 along each built-up section, with the flight depth of the first screw conveyor increasing by at least a factor of 2.0 at the termination of the built-up section of the central shaft, which termination is closer to a second end of the mechanical dewatering zone than to the first end of the mechanical dewatering zone;

(b) pressurizing the feed stream within the cylindrical porous wall to a superatmospheric pressure by rotating the first screw conveyor;

(c) withdrawing water radially outward through the cylindrical porous wall;

(d) transporting solids derived from the feed stream which are located in the grooves of the helical blade of the first screw conveyor to a second end of the first screw conveyor; and,

(e) withdrawing a dewatering zone solids stream which comprises at least 35 wt.% solids from the second end of the mechanical dewatering zone.

4,380,497

AMINES OF ALKOXYDIPHENYL ESTHERS AS ANTIOXIDANTS AND LUBRICATING OILS AND GREASES CONTAINING SAME

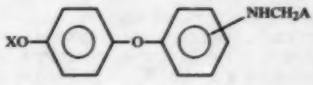
John T. Roberts, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed May 12, 1981, Ser. No. 263,376

Int. Cl.³ C10M 1/38

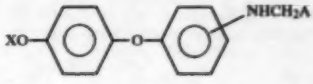
U.S. Cl. 252—47.5 20 Claims

1. A method of inhibiting oxidation in lubricating oils and greases comprising adding thereto an oxidation inhibiting amount of a material with the structure



where —$NHCH_2A$ is at the 2'- or 4'-position, A is a monovalent radical whose parent is selected from the group consisting of unsubstituted and ring-substituted aromatic and heteroaromatic rings, and X is an alkyl group containing up to about 18 carbon atoms.

12. A composition comprising a major amount of a lubricating oil or grease and a minor amount from about 0.05% to about 5% by weight of a material with the structure,



where —$NHCH_2A$ is at the 2'- or 4'-position, A is a monovalent radical whose parent is selected from the group consisting of unsubstituted and ring-substituted aromatic and heteroaromatic rings, and X is an alkyl group containing up to about 18 carbon atoms.

4,380,498

SULFURIZED, TRANSESTERIFIED OIL ADDITIVES AND THEIR USE IN A LUBRICATING OIL AND A FUEL

Karl P. Kammann, Jr., Crown Point, Ind.; Marvin J. Den Herder, Olympia Fields, and Terrence L. Wagner, Crete Township, Will County, both of Ill., assignors to Ferro Corporation, Cleveland, Ohio

Filed Aug. 10, 1981, Ser. No. 291,544

Int. Cl.³ C10M 1/20, 1/38; C10L 1/18, 1/24

U.S. Cl. 252—48.6 41 Claims

1. A sulfurized, triglyceride additive composition comprising a sulfurized, transesterified triglyceride wherein the total acid component of the triglyceride includes from about 5 to about 50 mole % polybasic carboxylic acids.

4,380,499

SULFURIZED FATTY OIL ADDITIVES AND THEIR USE IN A LUBRICATING OIL AND A FUEL

Karl P. Kammann, Jr., Crown Point, Ind., and Marvin J. Den Herder, Olympia Fields, Ill., assignors to Ferro Corporation, Cleveland, Ohio

Filed Aug. 10, 1981, Ser. No. 291,545

Int. Cl.³ C10M 1/20, 1/38; C10L 1/18, 1/24

U.S. Cl. 252—48.6 35 Claims

1. A sulfurized, triglyceride additive composition, comprising a sulfurized, transesterified triglyceride wherein the total acid component of the triglyceride comprises no less than about 35 mole % saturated aliphatic acids and no more than about 65 mole % unsaturated fatty acids, said total acid component being further characterized as comprising:

(a) more than about 20 mole % of mono-unsaturated acids;

(b) less than about 15 mole % of poly-unsaturated fatty acids;
(c) more than about 20 mole % saturated aliphatic acids having 6 to 16 carbon atoms, including more than about 10 mole % saturated aliphatic acids having 6 to 14 carbon atoms; and
(d) less than about 15 mole % saturated aliphatic acids having 18 or more carbon atoms.

4,380,500

BRANCHED CHAIN OLEFINIC ALCOHOLS, THIOLS, ESTERS AND ETHERS, ORGANOLEPTIC USES THEREOF, PROCESSES FOR PREPARING SAME AND INTERMEDIATES THEREOF

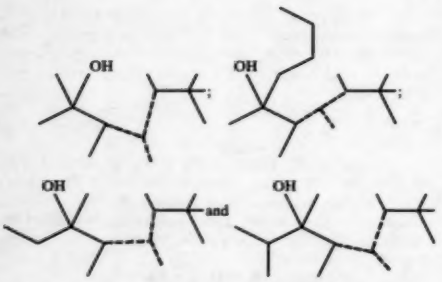
Richard M. Boden, Monmouth Beach, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 212,887, Dec. 4, 1980, Pat. No. 4,318,934. This application Nov. 19, 1981, Ser. No. 322,731

Int. Cl.³ C11D *3/50, 9/44*

U.S. Cl. 252—174.11 **6 Claims**

1. A process for augmenting or enhancing the aroma of a solid or liquid anionic, cationic, nonionic or zwitterionic detergent comprising the step of adding to a solid or liquid anionic, cationic, nonionic or zwitterionic detergent base an aroma augmenting or enhancing quantity of at least one branched chain olefinic chalcogen derivative having a structure selected from the group consisting of:



wherein one of dashed lines represents a carbon-carbon double bond and each of the other of the dashed lines represent carbon-carbon single bonds.

4,380,501

GAS SCAVENGER AGENTS FOR CONTAINERS OF SOLID CHLOROISOCYANURATES

John A. Wojtowicz, Cheshire, and Andree M. B. Gergo, East Haven, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed May 11, 1981, Ser. No. 262,574

Int. Cl.³ C11D *3/48, 3/24, 3/395*

U.S. Cl. 252—186.24 **14 Claims**

1. In a container of a solid chloroisocyanurate composition, the improvement which comprises enclosing therein a gas scavenging agent consisting essentially of a mixture of an alkaline earth metal sulfate, an alkali metal bicarbonate, and carbon.

4,380,502

PROCESS FOR THE PRODUCTION OF POLYETHER POLYOLS

Hanns P. Müller, Odenthal, Fed. Rep. of Germany; Claus-Dieter Sommerfeld, Pittsburgh, Pa., and Gernot Becker, Dormagen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

Filed Mar. 2, 1981, Ser. No. 239,247

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1980, 3012001

Int. Cl.³ C07H *3/04;* **C09K** *3/00*

U.S. Cl. 252—182 **6 Claims**

1. A process for the production of polyether polyols having an average hydroxyl functionality of at least 3 and a hydroxyl number of from 28 to 1000 by alkoxylating a mixture comprising:
(a) from 20 to 80% by weight of sucrose (based on the sum of (a) and (b)), and
(b) from 80 to 20% by weight of formitol having an average hydroxyl functionality of at least 3 (based on the sum of (a) and (b)).

4,380,503

PROCESS FOR PREPARING OIL-IN-WATER EMULSION

Götz Koerner, Essen; Gerd Sänger, Heiligenhaus-Isenbügel; Hans-Ferdi Fink, and Friedhelm Grassmann, both of Essen, all of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Fed. Rep. of Germany

Filed Jun. 3, 1981, Ser. No. 269,844

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1980, 3024870

Int. Cl.³ B01J *13/00*

U.S. Cl. 252—314 **3 Claims**

1. A process for the preparation of fine-particulate, stable emulsions of the oil-in-water type, which comprises
(a) distributing the quantity of emulsifier required to achieve a stable emulsion in about 0.5 to 3 times the amount of water by weight, based upon the emulsifier weight,
(b) introducing the oleic phase to be emulsified into the foregoing dispersion and homogenizing it under the effect of high shear stresses until a uniform gel is formed,
(c) forcing the gel so obtained through a slotted disk, provided with a plurality of holes less than 10 mm in diameter, into the remaining amount of water, and stirring the emulsion so obtained while avoiding high shear stresses until the gel particles are completely dissolved.

4,380,504

ψ-EMULSANS

David L. Gutnick, Ramat Aviv; Eugene Rosenberg, Raanana; Igal Belsky, Ramat Aviv, and Zosim Zinaida, Kefar Sava, all of Israel, assignors to Petroleum Fermentations N.V., Netherlands Antilles

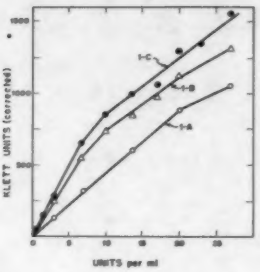
Division of Ser. No. 12,971, Feb. 22, 1979, abandoned. This application May 14, 1980, Ser. No. 146,053

Int. Cl.³ B01F *17/30, 17/34, 17/52*

U.S. Cl. 252—356 **3 Claims**

1. The O-deacylated extracellular protein-associated microbial polysaccharides (herein collectively called "ψ-emulsans") obtained from the emulsans produced by Acinetobacter Sp. ATCC 31012 and its mutants, the protein-free components of such ψ-emulsans being completely N-acylated heteropolysac-

charides made up of major amounts of D-galactosamine and an aminouronic acid and containing from 0 to 1 percent by weight



of fatty acid esters in which, when present, the fatty acids contain from about 10 to about 18 carbon atoms.

4,380,505

APPARATUS FOR PRODUCING AEROSOL PRODUCT

Augustinus J. M. Wittenhorst, Westerburg, Fed. Rep. of Germany, assignor to von Treu AG, Zug, Switzerland

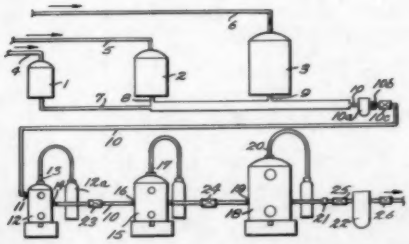
PCT No. PCT/DE79/00136, § 371 Date Jul. 11, 1980, § 102(e) Date Jul. 10, 1980, PCT Pub. No. WO80/00973, PCT Pub. Date May 15, 1980

PCT Filed Nov. 10, 1979, Ser. No. 202,448

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1978, 2849074

Int. Cl.³ B01F 5/00; B01J 13/00

U.S. Cl. 252—359 R 3 Claims



1. Apparatus suitable for the production of an aerosol product consisting of active substance, propellant and solvent wherein the propellant consists exclusively of a noble gas which is helium, neon, argon, krypton or mixtures thereof by a process comprising bringing together the active substance and the solvent under pressure, charging overhead to a pressure vessel and seeping therein, while at the same time introducing into the pressure vessel a compressed noble gas and adding the noble gas by doses to the active substance-solvent mixture and subsequently collecting the newly developed mixture and feeding it to a bottling plant, said apparatus comprising a mixing vessel (1, 2) for the storage of active substance, a mixing vessel (3) for the storage of solvent, whereby the mixing vessels (1, 2; 3) have feed lines (4, 5; 6) separated from one another and are provided with discharge lines (7, 8; 9) which converge to a common conveying line (10), furthermore characterized by a pressure tank (12) with an inlet connection (11) overhead, which is connected to the common conveying line (10), an additional inlet connection (13) overhead, to which a compression tank (12a) for noble gas has been connected as well as a discharge connection (14) which is disposed at a distance from the bottom of the pressure vessel (12).

4,380,506

PROCESS FOR PRODUCING PRESERVATIVES

Yukichi Kimura, Narashino, and Takeshi Kanamori, Chiba, both of Japan, assignors to Lion Corporation, Tokyo, Japan

Filed Mar. 25, 1981, Ser. No. 247,249

Claims priority, application Japan, Apr. 8, 1980, 55-45824

Int. Cl.³ C09K 15/34

U.S. Cl. 252—398 8 Claims

1. A process for producing a preservative, comprising the steps of:

preparing a starting material selected from the group consisting of herb family spices, residues obtained after the recovery of essential oils from herb family spices, oleoresins extracted from herb family spices with a polar solvent, and oleoresins extracted from herb family spices with a non-polar solvent and associated residues, said herb family spices being selected from the group consisting of sage, rosemary, majooram, thyme, oregano and basil;

subjecting the starting material to extraction with a solvent mixture of a polar solvent compatible with water and a non-polar solvent selected from the group consisting of n-hexane, petroleum ether, ligroin, cyclohexane, carbon tetrachloride, chloroform, dichloromethane, 1,2-dichloroethane, toluene, benzene and mixtures thereof, the ratio by volume of the polar solvent to the non-polar solvent ranging from 2:98 to 50:50;

adding an adsorbent to said extractive in an amount of 1–20% by weight based upon the weight of the starting material;

adding water to the extractive after said adsorbent is separated;

allowing the polar solvent to migrate into the water;

separating the mixture into a water/polar solvent phase and a non-polar solvent phase having a highly oil-soluble active fraction dissolved and a substantially oil-insoluble active fraction precipitated; and

recovering the non-polar solvent phase as a preservative.

4,380,507

CATALYSTS FOR POLYMERIZING ETHYLENE

Luciano Noristi, and Giovanni Baruzzi, both of Ferrara, Italy, assignors to Montedison S.p.A., Milan, Italy

Continuation of Ser. No. 802,367, Jun. 2, 1977, abandoned. This application Nov. 24, 1981, Ser. No. 324,419

Claims priority, application Italy, Jun. 3, 1976, 23903 A/76

Int. Cl.³ C08F 4/02, 10/02

U.S. Cl. 252—429 B 4 Claims

1. The process for preparing components of catalysts for polymerizing ethylene or mixtures thereof with minor amounts of alpha-olefins of formula CH_2=CHR, in which R is an alkyl radical containing from 1 to 6 carbon atoms, said components comprising the product obtained by reacting a solid halogenated Ti compound selected from the group consisting of $TiCl_3$ and Ti halogen-alcoholates with a Grignard compound having the formula RMgX, in which R is an alkyl, cycloalkyl or aryl radical containing from 2 to 16 carbon atoms, and X is Cl or Br, in an aliphatic hydrocarbon, at a temperature between 35° and 40° C. and a Grignard compound/titanium compound molar ratio equal to at least 7, isolating the solid reaction product, and reacting it with a halogenating agent at a temperature between 0° and 150° C. and a halogenating agent/Grignard compound molar ratio higher than 0.5, said halogenating agent being selected from the group consisting of $TiCl_4$, $SiCl_4$ and PCl_3.

4,380,508

ULTRA HIGH EFFICIENCY CATALYST FOR POLYMERIZING OLEFINS

Randall S. Shipley, Alvin, and Donald F. Birkelbach, Angleton, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 22, 1981, Ser. No. 313,903
Int. Cl.³ C08F 4/64
U.S. Cl. 252—431 C 17 Claims

1. A reaction product or complex formed from an admixture of

(a) a reaction product or complex formed from a mixture of

(i) at least one transition metal compound represented by the empirical formulae $Tm(OR)_yX_{x-y}$, $TmOX_{x-2}$ or $Tm(OR)_{x-2}O$ wherein Tm is a transition metal selected from groups IVB, VB or VIB; each R is independently a hydrocarbyl group having from 1 to about 20 carbon atoms; each X is independently a halogen; x has a value equal to the valence of Tm and y has a value from 1 to the valence of Tm; and

(ii) at least one non-metallic oxygen-containing compound selected from the group consisting of molecular oxygen, air, alcohols, ketones, aldehydes, carboxylic acids, esters of carboxylic acids, peroxides, water and mixtures thereof; and wherein said mixture of (i) and (ii) is subjected to a temperature of from about −50° C. to about 110° C. for a time sufficient to effect a color change; and

(b) a reducing alkylating agent represented by the empirical formula $M'R_{a-b}X_b$ wherein M' is a metal selected from the group consisting of Al, Li, Mg or B; X is a halogen, preferably chlorine or bromine; each R is independently an alkyl group having from 1 to about 20 carbon atoms; a has a value equal to the valence of the metal M' and b has a value of from zero up to the valence of the metal M' minus 1; and wherein components (a) and (b) are mixed in proportions such that the atomic ratio of M':Tm is from about 0.1:1 to about 5:1 and the atomic ratio of O:Tm is from about 0.1:1 to about 4:1.

4,380,509

METHOD FOR PRODUCING A CATALYST FOR THE HYDRATION OF OLEFINS

August Sommer; Wilhelm Heitmann, both of Herne, and Rainer Brücker, Castrop-Rauxel, all of Fed. Rep. of Germany, assignors to Chemische Werke Huls AG, Marl, Fed. Rep. of Germany

Filed Mar. 23, 1981, Ser. No. 246,257
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1980, 3011610
Int. Cl.³ B01J 37/02, 21/12
U.S. Cl. 252—453 14 Claims

1. A method for producing a carrier for a catalyst comprising the steps of:

mixing a first solution containing a soluble salt of aluminum and a second solution containing a soluble salt of silicic acid in a ratio that gives a precipitate comprising aluminum silicate having a weight ratio of Al_2O_3:SiO_2 of 1:5 to 1:7;

forming said precipitate into a carrier body;

consolidating said carrier body by heating; and

treating said carrier body with an acid, wherein the Al_2O_3 content of said carrier body is reduced to 1–5% by weight.

2. The method of claim 1, wherein 5–15% of at least one oxide of the Group VI metals is added to said precipitate prior to forming said carrier body.

13. The method of claim 1, wherein said acid is hydrochloric acid.

14. The method of claim 1, wherein said soluble salt of aluminum is aluminum sulfate and said soluble salt of silicic acid is sodium silicate.

4,380,510

METHOD OF MAKING LAYERED CATALYSTS

Michael J. D'Aniello, Jr., Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 4, 1981, Ser. No. 318,132
Int. Cl.³ B01J 21/04, 23/38
U.S. Cl. 252—466 PT 4 Claims

1. A method of selectively placing noble metal catalyst material on a thin layer of a porous, high surface area alumina or base metal-containing alumina carrier particle where the layer may either be at the apparent outer surface of the particle or, if desired, submerged below the outer surface, comprising

saturating the pores of said particle with liquid C_1 to C_3 dialkyl ketone,

if necessary, blocking absorbent pore surface sites in said particle outwardly of the desired position of said layer by applying thereto an acid blocking agent,

contacting said particle with a solution of a noble metal catalyst material in a substantially water-free C_1 to C_3 dialkyl ketone whereby the catalyst material is strongly absorbed on said particle on a layer beginning with the outermost unblocked sites and extending inwardly into said particle a depth determined by the amount of noble metal material in said solution, and

calcining said particle to remove said blocking agent, if present, and to fix said noble metal catalyst.

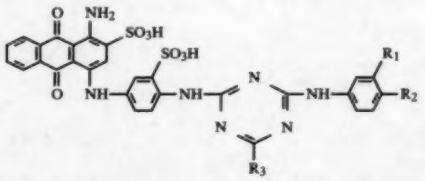
4,380,511

PURIFICATION OF BOVINE THROMBIN

Frank J. Mannuzza, Peotone, and Joseph G. Montalto, Bradley, both of Ill., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Aug. 12, 1981, Ser. No. 292,236
Int. Cl.³ C07G 7/00
U.S. Cl. 260—112 B 6 Claims

1. A method for removing pyrogenic material from pyrogen-containing bovine thrombin which comprises the steps of forming a complex of a dye having the structure:



where R_1 and R_2 are hydrogen or SO_3H, and R_3 is Cl or O; and a dextran which has been cross-linked with epichlorohydrin to produce a three-dimensional network of polysaccharides, equilibrating the complex with a low ionic strength salt solution, contacting said complex with said pyrogen-containing bovine thrombin, washing said thrombin with a low ionic strength salt solution to remove said pyrogens, and recovering pyrogen-free bovine thrombin.

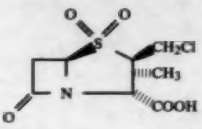
4,380,512

2β-CHLOROMETHYL-2α-METHYLPENAM-3α-CARBOXYLIC ACID SULFONE AND SALTS AND ESTERS THEREOF

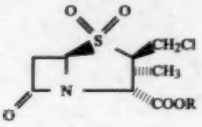
William J. Gottstein, Fayetteville, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 214,831, Dec. 11, 1980, abandoned, which is a continuation-in-part of Ser. No. 113,894, Jan. 21, 1980, abandoned. This application Jun. 8, 1981, Ser. No. 271,744
Int. Cl.³ C07D 499/00; A61K 31/425
U.S. Cl. 260—245.2 R 17 Claims

1. The acid having the formula



or a pharmaceutically acceptable salt of said acid or an ester of said acid having the formula



wherein R is phenacyl, acetoxymethyl, pivaloyloxymethyl, α-acetoxyethyl, α-acetoxybenzyl, α-pivaloyloxyethyl, 3-phthalidyl, 5-indanyl, methoxymethyl, benzoyloxymethyl, α-ethylbutyryloxymethyl, propionyloxymethyl, valeryloxymethyl, isobutyryloxymethyl, 6-[(R)-2-amino-2-phenylacetamido]-3,3-dimethyl-7-oxo-4-thia-1-azabicyclo[3.2.0]heptane-2-carbonyloxymethyl or 6-[(R)-2-amino-2-p-hydroxyphenylacetamido]-3,3-dimethyl-7-oxo-4-thia-1-azabicyclo[3.2.0]heptane-2-carbonyloxymethyl.

4,380,513

INERT ROSIN ESTERS AND PROCESS FOR PREPARING THE SAME

Erwin R. Ruckel, Wilton, and Martin Epstein, Norwalk, both of Conn., assignors to Arizona Chemical Company, Fairlawn, N.J.

Filed Nov. 30, 1981, Ser. No. 325,700

Int. Cl.³ C09F *7/00, 1/00*

U.S. Cl. 260—104 **10 Claims**

1. A modified rosin ester of a primary polyhydric alcohol, said ester having 50 to 95 percent of the hydroxyl groups of the polyhydric alcohol esterified with rosin and the remaining hydroxyl groups esterified with lower aliphatic monocarboxylic acid or acid chloride or acid anhydride and no more than negligible residual hydroxyl content.

4,380,514

PREPARATION OF OPTICAL BRIGHTENERS

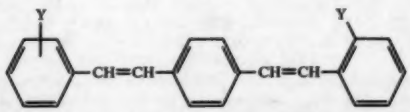
Guenther Seybold, Ludwigshafen, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 8, 1980, Ser. No. 214,227

Int. Cl.³ C07C *121/64, 64/767;* D06L *3/12;* C11D *3/42*

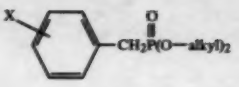
U.S. Cl. 260—465 H **7 Claims**

1. A process for the preparation of an unsymetrically substituted optical brightener compound of the general formula



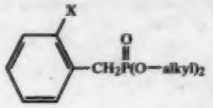
I

where X and Y independently of one another are hydrogen, fluorine, chlorine, cyano, C_1–C_{10}-alkoxycarbonyl, unsubstituted or substituted carbamyl or sulfamyl, a sulfonic acid aryl ester group, C_1–C_{10}-alkylsulfonyl or phenyl-sulfonyl, and at least one of X and Y is not hydrogen, and of mixtures of such optical brighteners free of p,p'-substituted compounds, which comprises reacting in a first step terephthaladehyde with a phosphonate compound of the general formula IIa



IIa

or of the general formula IIb



IIb

where X and Y have the above meanings in the presence of an alkali, in a solvent from which the monocondensation product of terephthaldehyde and the phosphonate compound precipitates to form a first reaction product containing the monocondensation product and thereafter completing the reaction to prepare a compound or a mixture of compounds of formula (I) by reacting the first reaction product in the presence of alkali and said solvent with a different phosphonate compound of formula IIa or IIb, with the proviso that at least one compound of formula IIa and a compound of formula IIb are reacted successively in the process.

4,380,515

N-SUBSTITUTED 6-AMINO-DIBENZ[C,E][1,2]OXAPHOSPHORINES

Michael Rasberger, and Samuel Evans, both of Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

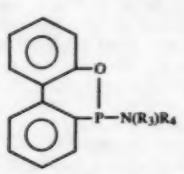
Continuation of Ser. No. 104,335, Dec. 17, 1979, abandoned, which is a continuation of Ser. No. 27,336, Apr. 5, 1979, abandoned. This application Mar. 9, 1981, Ser. No. 241,807

Claims priority, application Switzerland, Apr. 14, 1978, 4026/78

Int. Cl.³ C07F *9/46, 9/65*

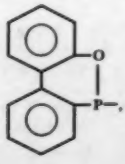
U.S. Cl. 260—936 **2 Claims**

1. A compound of the formula

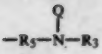


wherein

R_3 is hydrogen, C_1–C_{12} alkyl, cyclohexyl or the group Q, where Q is



R_4 is C_1–C_{12} alkyl, cyclohexyl or a group of the formula



where

R_3 and Q have the meanings given above,

R_5 is C_2–C_6 alkylene,

R_3 and R_4 together with the N atom to which they are attached form a piperidine or morpholine ring, or

R_3 and R_4 together are the radical $—CH_2CH_2—N(-Q)—CH_2CH_2—$ wherein Q has the meaning given above.

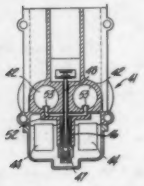
2. 6-(N,N-Di-isopropyl-amino)-dibenz[c,e][1,2]oxaphosphorine, according to claim 1.

4,380,516

CARBURETOR

Hiroshi Matsuzaka, Hamamatsu, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Sep. 24, 1981, Ser. No. 305,270
Claims priority, application Japan, Sep. 30, 1980, 55-136521
Int. Cl.³ F02M 9/06
U.S. Cl. 261—23 A 3 Claims



1. In an induction system for an internal combustion engine having two intake passages serving the same chamber and a two-barrel carburetor having each of its barrels disposed generally horizontally and communicating with and serving a respective one of said intake passages, each of said carburetor barrels having a respective fuel discharge circuit, the improvement comprising said carburetor having a single fuel bowl positioned adjacent and extending beneath both of said barrels, a fuel well depending centrally into said fuel bowl and having a main jet positioned at its lower end, said fuel well serving both of said carburetor barrel fuel discharge circuits.

4,380,517

ICE PREVENTING APPARATUS AND METHOD FOR GAS AND LIQUID CONTACT MEANS OF AN ATMOSPHERIC COOLING TOWER

Jacques G. P. E. Bosne, Viroflay, France, assignor to Hamon-Sobelco, S.A., Brussels, Belgium

Filed Feb. 16, 1982, Ser. No. 348,752
Int. Cl.³ B01F 3/04
U.S. Cl. 261—142 9 Claims

1. A process for avoiding, in a cold period, the formation of ice inside a cooler having lower air inlet apertures and which employs atmospheric air and a freezable liquid stream, characterized in that said process comprises providing said air inlet apertures with vertical trellises which extend in a part of said apertures from the top of said apertures downwardly, causing, in a cold period, cold water to stream along said trellises so as to form under controlled conditions along said trellises curtains of ice which partly close said apertures and, when the temperature of the air, and consequently the temperature of the water cooled inside the cooler, resumes a sufficiently high

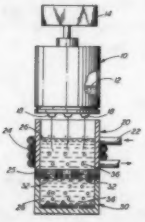
temperature to avoid formation of ice inside the cooler, melting the said curtains of ice.

4,380,518

METHOD OF PRODUCING SOLDER SPHERES

Richard A. Wydro, Sr., Hamilton Township, Mercer County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Jan. 4, 1982, Ser. No. 337,049
Int. Cl.³ B01J 2/06
U.S. Cl. 264—13 14 Claims



1. A method of making metal spheres having non-oxidized surfaces, comprising:

introducing a metal having a low melting temperature into a liquid flux comprising an activator and antioxidant, the flux being maintained at a temperature so as to cause metal spheres to form, the state of the metal and the respective temperature of the metal and flux being such that spheres of the metal are formed when the metal is introduced into the flux.

4,380,519

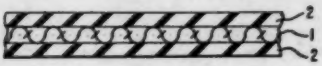
PROCESS FOR EMBOSSING POLYMERIC SUBSTRATES BY USING A COMPOSITE STRUCTURE OF AN AROMATIC POLYAMIDE FABRIC COATED WITH A FLUOROSILICONE RUBBER

Richard H. Carlson, Clinton, Conn., and Gerald L. Gatcomb, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 249,225, Mar. 30, 1981, Pat. No. 4,346,140.
This application Apr. 23, 1982, Ser. No. 371,472
Int. Cl.³ B29C 17/00
U.S. Cl. 264—26 7 Claims

1. A process for embossing flexible polymeric substrates in a dielectric heating press having a platen and a design fixture by placing a composite sheet structure between the substrate being embossed and the platen of the press and embossing the

substrate wherein the composite sheet structure comprises a layer about 2–30 mils thick of a fluorosilicone rubber firmly adhered to both side of an aromatic polyamide fabric and



having a dielectric constant of about 4–8 and a dissipation factor of about 0.015–003 where the dielectric constant and dissipation factor are determined at one megahertz frequency according to ASTMD-1531.

4,380,520

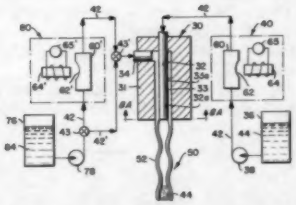
PROCESS FOR PRODUCING HOLLOW FIBRES HAVING A UNIFORM WALL THICKNESS AND A NON-UNIFORM CROSS-SECTIONAL AREA

John A. Taylor, Furlong, Pa., assignor to Extracorporeal Medical Specialties, Inc., King of Prussia, Pa.

Division of Ser. No. 19,972, Mar. 12, 1979, Pat. No. 4,291,096. This application Jul. 14, 1980, Ser. No. 167,900

Int. Cl.³ D01D *5/20*

U.S. Cl. 264—40.3 **14 Claims**



1. A method for producing a hollow fiber having a hollow core extending continuously throughout the length thereof, said fiber having a uniform wall thickness and a non-uniform cross-sectional area, said method comprising

(a) providing a tube-in-orifice spinneret comprising a housing having a chamber communicating with an outer surface thereof and a hollow tube having a continuous lumen extending the length thereof secured within said chamber, the walls of said chamber and the outer surface of said tube defining an annular space through which a fiber forming material may be extruded;

(b) supplying a fiber forming material to said chamber at a constant mean flow rate while simultaneously varying the pressure on said supplied fiber forming material;

(c) extruding said fiber forming material through said annular space to form a hollow core extrudate;

(d) supplying a fluid at a constant mean flow rate to the lumen of said hollow tube while simultaneously varying the pressure on said supplied fluid, the pressure variations on said supplied fluid being synchronized with the pressure variations on said supplied fiber forming material;

(e) removing from the exit of said spinneret said extrudate with said fluid contained in the hollow core thereof;

(f) converting said fiber forming material to fiber form.

4,380,521

METHOD TO PRODUCE A POLYTETRA-FLUOROETHYLENE DIAPHRAGM

Carlos M. Moreno; Robert D. Bridges, and Andre J. Uzee, all of Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 877,060, Feb. 13, 1978, Pat. No. 4,224,130, which is a continuation of Ser. No. 777,868, Mar. 15, 1977, abandoned. This application Sep. 22, 1980, Ser. No. 189,977

Int. Cl.³ B29D *27/00*

U.S. Cl. 264—49 **15 Claims**

1. A method to form an electrolyte permeable diaphragm for an electrolytic cell for producing chlorine and an alkali metal hydroxide comprising:

(a) combining about 1 to about 50 parts by weight polytetrafluoroethylene powder having an average particle size of about 100 to about 1,000 microns diameter with about 50 to about 98 parts by weight of a solid pore-forming powder having an average particle size of about 0.1 to about 100 microns diameter, and about 10 to about 1,000 parts by weight of a nonaqueous liquid capable of wetting the polytetrafluoroethylene and incapable of dissolving substantial amounts of the pore-forming powder;

(b) mixing the combination with a shearing means sufficiently to reduce the average particle sizes of the polytetrafluoroethylene to leas than about 50 microns diameter;

(c) removing a portion of the liquid from the mixture of step (b) until the mixture has a liquid to solid weight ratio of about 0.05 to about 1;

(d) rolling the compressed mixture a plurality of times to form a sheet;

(e) heating the sheet sufficiently to sinter the sheet material; and

(f) removing at least a portion of the solid pore-forming powder from the sintered sheet by contacting the sheet with a liquid medium to produce a porous polytetrafluoroethylene sheet with a thickness of from about 5 to about 100 mils, an average pore size of from about 0.1 to about 100 microns, a gas permeability of from about 1 to about 100 seconds, a liquid permeability factor of from about 1 to about 60, and a tensile strength of from about 100 to about 1000 pounds per square inch.

4,380,522

PROCESS FOR THE MANUFACTURE OF ARTICLES FROM COMPOSITION COMPRISING MODIFIED POLYOLEFINES AND CELLULOSIC FIBRES

Pierre Georlette, Hamme-Mille, and Rene Bouteille, Braine-l'Alleud, both of Belgium, assignors to Solvay & Cie., Brussels, Belgium

Continuation of Ser. No. 65,881, Aug. 13, 1979, abandoned. This application Apr. 13, 1981, Ser. No. 253,556

Claims priority, application France, Aug. 11, 1978, 78 23947

Int. Cl.³ B29D *7/14*

U.S. Cl. 264—175 **7 Claims**

1. Process for manufacture of a shaped article from a polyolefine composition comprising between 30 and 70% by weight of a polyolefine which is a high density polyethylene modified by means of a polar monomer and between 30 and 70% by weight of cellulosic fibres, comprising: subjecting the polyolefine composition to a malaxating operation carried out at a temperature which is at least 40° C. above the melting point of the polyolefine, before the composition is moulded.

4,380,523

METHOD OF MANUFACTURING A COMPOSITE MATERIAL

David J. Lind, Breadsall, and Joyce Richards, Ambergate, both of England, assignors to Rolls-Royce Limited, London, England

Filed Jul. 16, 1981, Ser. No. 283,976
Claims priority, application United Kingdom, Sep. 10, 1980, 8029268
Int. Cl.³ B29D *3/02*; B29F *5/00*
U.S. Cl. 264—257 6 Claims

1. A method of manufacturing a substantially completely void free composite material comprising the steps of

(a) applying a first high temperature resistant thermoplastic polymer to at least one layer of reinforcing filaments in an amount sufficient to increase the weight of said filaments by up to about 5% and to lightly bind said carbon filaments together and to retain the configuration of said filaments,

(b) forming a structure of said at least one layer of the thus bound filaments and sheets of a second high temperature resistant polymer so that one layer of said bound filaments is interposed between sheets of said second thermoplastic polymer and to retain the configuration of said filaments, wherein the first thermoplastic polymer is a polycarbonate, a polysulphone, a polyethersulphone or a polyimide and the second thermoplastic polymer is an aromatic polyetherether ketone,

(c) compressing said structure at a temperature at which said first thermoplastic polymer does not thermally decompose and at which said second thermoplastic polymer is sufficiently mobile to impregnate said layer of reinforcing filaments, said temperature being insufficient to soften said filaments,

(d) maintaining said compression at said temperature for at least one hour to cause said second thermoplastic polymer to impregnate said at least one layer of bound filaments and for at least a major portion of said first thermoplastic polymer to diffuse into said second thermoplastic polymer,

(e) cooling the thus formed composite under compression in order to avoid any distortion thereof, and subsequently

(f) discontinuing said compression thereby producing a composite material that is substantially completely void free.

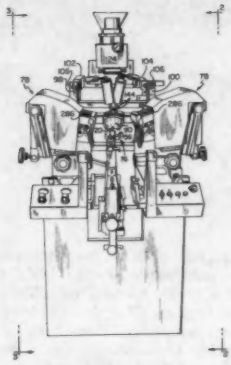
4,380,524

CEMENT APPLYING MACHINE AND METHOD

Sinville Runions, Booneville, Miss., assignor to International Shoe Machine Corporation, Nashua, N.H.

Filed Apr. 6, 1979, Ser. No. 27,561
Int. Cl.³ B05C *3/02*
U.S. Cl. 264—263 3 Claims

1. A machine, operable on a shoe assembly formed of a last having an insole located on its bottom and an upper having a margin mounted thereon with a portion of the upper margin being wiped against and secured to the insole and with an unwiped portion of the upper margin having a boundary with said wiped margin portion, extending rearwardly of said wiped margin portion, projecting away from the insole periphery so as to form a corner between said unwiped margin portion and the corresponding portion of the insole periphery and with a segment of the upper margin at said boundary overhanging the insole, for applying cement in said corner comprising: a shoe assembly support for supporting the shoe assembly bottom-up with said wiped margin portion being forward of said unwiped margin portion; a heightwise extending nozzle, located above the shoe assembly, having a laterally projecting tip through which cement may be extruded; nozzle mounting means mounting the nozzle for swinging movement about its heightwise extending axis; forward-rearward moving means for effecting forward-rearward movements of the nozzle between a rearward nozzle position that is rearward of said boundary and a forward nozzle position that is located at said boundary; heightwise moving means for effecting heightwise movements of the nozzle between an upper nozzle position wherein the nozzle is spaced above the bottom of the shoe assembly and a lower nozzle position wherein the nozzle is in engagement with the bottom of the shoe assembly; means for initially causing the forward-rearward moving means and the heightwise moving means to locate the nozzle in said rearward and lower nozzle positions; means for thereafter causing the forward-rearward moving means to move the nozzle to the forward nozzle position in a cement applying stroke; means for so constraining the nozzle during the cement applying stroke that



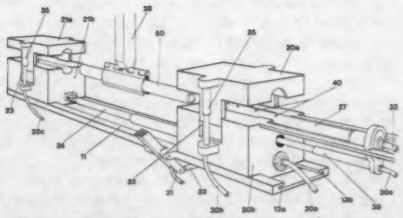
the nozzle tip is in said corner with the nozzle tip projecting outwardly of the nozzle and being beneath said margin segment at the end of the cement applying stroke; means effective during the cement applying stroke to extrude cement through the nozzle tip into said corner; means, effective subsequent to the completion of the cement applying stroke, to so swing the nozzle about said axis as to move the nozzle tip rearwardly and inwardly and thus move the nozzle tip out from under said margin segment; and means for thereafter causing the heightwise moving means to raise the nozzle to the upper nozzle position.

4,380,525

PROCESS FOR THE PRODUCTION OF A BLANK FOR SUBSEQUENT SHAPING BY BLOW-MOLDING

Kjell M. Jakobsen, Hökvägen, and Claes T. Nilsson, Pramvägen, both of Sweden, assignors to PLM Aktiebolag, Malmo, Sweden

Filed May 30, 1980, Ser. No. 154,888
Claims priority, application Sweden, Jun. 11, 1979, 7905043
Int. Cl.³ B29C *17/07*
U.S. Cl. 264—521 10 Claims



1. A process for the manufacture of a tubular pre-moulding from a thermoplastic material comprising the steps of axially stretching a tube of the thermoplastic material to a substantially reduced material thickness in at least a central zone of a

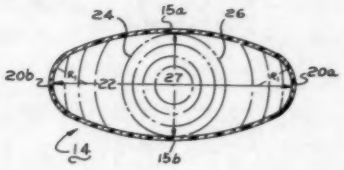
tube while substantially maintaining the diameter of the tube in the axially stretched section in said central zone, the reduction being by a factor sufficient to cause yielding and orienting of the material substantially in the axial direction of the future pre-moulding, the axial stretching of the tube being effected at a temperature not greater than the glass transition temperature of the thermoplastic material, heating the material in one of the oriented zones to a temperature above the glass transition temperature and expanding said material in the radial direction of the tube until it makes contact with mould walls to form a mouth part with adjacent neck sections of the pre-moulding, cooling the material to a temperature below the glass transition temperature, heating the material in at least one end of the tube to a temperature above the glass transition temperature, and reshaping said end to form the closure of the pre-moulding.

4,380,526

FORMING NON-CYLINDRICAL ARTICLES FROM PREFORMS OF POLYALKYLENE TEREPHTHALATE

Purushottam D. Agrawal, South Windsor, Conn., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 971,398, Dec. 20, 1978, Pat. No. 4,254,079. This application Feb. 2, 1981, Ser. No. 230,474
The portion of the term of this patent subsequent to Mar. 3, 1998, has been disclaimed.
Int. Cl.³ B29C *17/07*
U.S. Cl. 264—537 9 Claims



1. In the method of forming a molecularly oriented hollow article having a non-round cross section of substantially oval or substantially triangular or like cross section from a preform of thermoplastic material, which includes distending the preform in a mold while at molecular orientation temperature,

the improvements wherein the thermoplastic material is moldable polyalkylene terephthalate having an inherent viscosity of at least about 0.55, said preform region forming said cross section is not treated before said distending for the purpose of establishing a circumferential temperature difference therein, and the distending comprises, in combination, the steps of:

expanding first portions of said region against mold wall portions at the end of a minor axis of a cavity conforming to said non-round cross section to form relatively thick sections thereat while expanding other portions a greater extent than said first portions toward wall portions at the end of a major axis of said cavity thereby establishing a strain hardened pattern in the material wherein such expanded other portions are strain hardened greater than said thick sections; and

drawing material out of said thick sections as such expanded other portions of greater strain hardened level continue to expand toward the mold wall portions at the end of the major axis;

limiting the corner definition ratio to between about 3 to about 9 and the circular deviation ratio to no greater than about 2.4 at the cross section during said distending;

and controlling said distending according to the relations:

$$\% \text{ average axial stretch } (A) = \frac{[\text{article length minus preform length}] \text{ times } 100}{\text{preform length minus preform neck finish length}}$$

$$\% \text{ maximum radial stretch } (B) = \frac{[\text{maximum planar distance to mold from preform axis times two}] \text{ minus } [\text{preform outside diameter}] \text{ times } 100}{\text{preform outside diameter}}$$

wherein:

A is between about 15 to about 100; and

B is no greater than about 334;

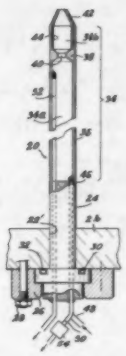
thereby forming said article having reduced wall thickness variability at the non-round cross section in comparison with an article having the same cross section formed of thermoplastic material which does not strain harden during distension.

4,380,527

STANDARD FISSION PRODUCT EMISSION DEVICE FOR DETECTING FAILED FUEL ELEMENTS IN A NUCLEAR REACTOR

Jean Graftieaux, Chatenay Malabry, and Rene Donguy, Verrieres le Buisson, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Aug. 15, 1980, Ser. No. 178,291
Claims priority, application France, Aug. 28, 1979, 79 21543
Int. Cl.³ G21C *17/00*
U.S. Cl. 376—245 3 Claims



1. In a standard fission product emission device, for detecting failed fuel elements in a nuclear reactor of the type cooled by pressurised water, said reactor comprising a pressure-resistant vessel and a core constituted by fuel element assemblies,

a hollow rod is provided, adapted to be inserted into said vessel and defining a chamber divided into a first chamber and a second chamber located at the end of the rod by a constriction creating a first drop in pressure, said second chamber comprising on its wall a deposit or a metal plate of radioactive material and communicating with the vessel of the reactor, when said device is in position, by a nozzle creating a second drop in pressure greater than the one created by said constriction, first tube disposed in said rod and opening out at the end of the first chamber remote from the second chamber, said first tube being adapted to be connected to a source of pressurised water at a pressure greater than that of the cooling water of said reactor, and a second tube also opening out at the end of the first chamber remote from the second chamber and adapted to collect the fission products emitted by said deposit when no pressure is applied at the inlet of said tube.

4,380,528

SILVER-BASED ALLOY

Jury F. Shevakin, Telegrafny pereulok, 11/16, kv. 53; Efim S. Shpichinetsky, ulitsa Donskaya, 6, kv. 93; Valentina P. Fedorenko, Teply Stan, 7 mikroraion, 108, kv. 107; Boris N. Efremov, ulitsa Veernaya, 26, korpus 1, kv. 17; Maria N. Klevchenkova, ulitsa F. Poletaeva, 8, korpus 4, kv. 59; Ivan A. Andrjuschenko, Molodezhnaya ulitsa, 4, kv. 321; Iosif A. Krasnoselsky, ulitsa Profsojuznaya, 102/47, kv. 6; Evgeny F. Anikeev, ulitsa Butlerova, 14, korpus 1, kv. 29; Evgeny A. Ivanov, Universitetsky prospekt, 4, kv. 228; Anatoly P. Khomyachkov, ulitsa Miklukho-Maklaya, 45, kv. 59, all of Moscow; Naum A. Shvarts, prospekt K. Marxa, 80, kv. 38; Ljudmila V. Kozhevnikova, prospekt Metallistov, 84, kv. 51, both of Leningrad; Roza M. Romanova, Profsojuznaya ulitsa, 79, korpus 2, kv. 10, and Alexandr D. Zhivotchenko, ulitsa Zoi Kosmodemyanskoi, 34"A", kv. 39, both of Moscow, all of U.S.S.R.

Filed May 6, 1981, Ser. No. 260,861
Int. Cl.³ C22C 5/06
U.S. Cl. 420—505 1 Claim

1. A silver-based alloy incorporating palladium, magnesium and aluminium in the following proportions of the components, percent by weight:

palladium	5 to 30
magnesium	0.1 to 0.5
aluminium	0.01 to 0.5
silver	the balance.

4,380,529

HYDROPROCESSING REACTOR WITH EXTENDED OPERATING LIFE

Ramesh Gupta, Chatham Township, Morris County, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 212,755, Dec. 4, 1980, Pat. No. 4,330,505. This application May 8, 1981, Ser. No. 261,985
The portion of the term of this patent subsequent to May 18, 1999, has been disclaimed.
Int. Cl.³ C10G 23/02
U.S. Cl. 422—220 8 Claims

1. A vessel, such as a reactor or absorption tower including means to introduce both liquid and gas into said vessel and means to remove both liquid and gas from said vessel;

a flow distributor tray disposed adjacent the liquid and gas introduction means;

at least one main bed of solids disposed in said vessel; and

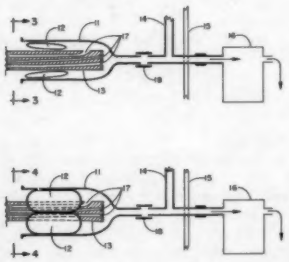
an auxiliary bed disposed above said main bed below said flow distributor tray having at least one gas bypass means for passing gas therethrough when said auxiliary bed becomes fouled, said gas bypass means comprising a hollow unobstructed open tube extending through said auxiliary bed and flow distributor tray to terminate at its uppermost end above the normal liquid level on said flow distributor tray, said unobstructed open tube having a gas flow resistance sufficient to act as a substantial gas seal against the passage of gas through said bypass means when said auxiliary bed is not fouled and to provide a low pressure drop bypass for said gas flowing to said main bed when said auxiliary bed becomes fouled, and at least one liquid bypass means for passing liquid through said auxiliary bed when said bed becomes fouled, said liquid bypass means comprising a hollow unobstructed open tube extending through said auxiliary bed and attached at its upper end to said flow distributor tray in fluid communication with liquid on said distributor tray, said liquid bypass means open tube having a liquid flow resistance sufficient to act as a substantial liquid seal against the passage of liquid through said liquid bypass means when said auxiliary bed is not fouled and to provide a low pressure drop bypass for said liquid flowing to said main bed when said auxiliary bed becomes fouled.

4,380,530

STERILIZER WITH INFLATABLE ARTICLE HOLDER

Saul Kaye, Evanston, Ill., assignor to Ben Venue Laboratories, Inc., Bedford, Ohio

Filed Feb. 13, 1981, Ser. No. 213,036
Int. Cl.³ A61L 2/20
U.S. Cl. 422—300 7 Claims



1. A device for holding medical instruments during sterilization comprising in combination a gas-tight sterilizing apparatus and an inflatable holder, said holder comprising sealed inflatable means maintained in a rigid holder within said sterilizing apparatus, said inflatable means being in a relaxed, non-rigid state at ambient pressure within said sterilizing apparatus thereby permitting the surfaces of said instruments to be contacted by a sterilizing medium and in an inflated state, for securely holding said instruments, under conditions of reduced pressure within said sterilizing apparatus.

4,380,531

PROCESS FOR PREPARING PHOSPHORUS ACID FROM INDUSTRIAL WASTE MATERIALS

Joseph S. Wisnouskas, Grand Island, N.Y., and Roland Ho, Wayne, Pa., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Oct. 21, 1981, Ser. No. 313,416
Int. Cl.³ C01B 25/16
U.S. Cl. 423—316 21 Claims

1. A process which is capable of producing highly purified phosphorus acid from a slurry of calcium phosphite-containing industrial waste material, said process comprising:

(a) reacting said slurry with at least one salt or hydroxide of

sodium or potassium to form a purified solution comprising a phosphite of sodium or potassium and a calcium precipitate,

(b) separating said precipitate from the purified phosphite solution, and

(c) passing the purified phosphite solution from step (b) through a cationic ion exchange resin to produce a solution of highly purified phosphorus acid.

4,380,532

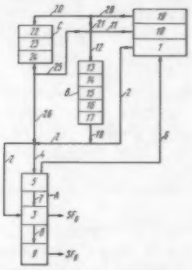
PROCESS FOR FINE PURIFICATION OF SULPHUR HEXAFLUORIDE FROM IMPURITIES

Igor M. Mazurin, Zeleny prospekt, 2/19, korpus 2, kv. 1; Mikhail L. Netupsky, ploschad Pobedy, 2, korpus 1, kv. 70; Alexandr V. Shevtsov, ulitsa Marshala Novikova, 16, kv. 37; Viktor T. Gladky, Chertanovskaya ulitsa, 51, korpus 2, kv. 123, all of Moscow; Nikolai A. Dmitriev, ulitsa Jubileinaya, 7, kv. 25, Zheleznodorozhny, Moskovskaya oblast; Andrei G. Lyapin, ulitsa Golubinskaya, 25, korpus 2, kv. 24, Moscow; Alexandr V. Polyakov, ulitsa Ussurilskaya, 14, korpus 1, kv. 21, Moscow; Mikhail A. Myshev, ulitsa Deguninskaya, 13, korpus 1, kv. 149, Moscow, and Vladimir V. Panov, Sredne-Kupavninsky proezd, 26, kv. 143, Moscow, all of U.S.S.R.

Filed Jul. 1, 1981, Ser. No. 279,484

Int. Cl.³ C01B 17/45

U.S. Cl. 423—469 6 Claims



1. A process for a fine purification of sulphur hexafluoride from impurities comprising purification of sulphur hexafluoride by crystallization at a speed of displacement of the interphase boundary of from 1 to 50 mm/hr.

5. A process according to claim 1, wherein for the purification of sulphur hexafluoride containing, as impurities, lower sulphur fluorides and HF, the gas is preliminary purified by sorption on KOH, a portion of impurities is subjected to a catalytical decomposition at a temperature of from 548° to 598° K., a repeated sorption on KOH, sorption on Al_2O_3 and drying on zeolites of NaX type.

4,380,533

PROCESS FOR THE PRODUCTION OF DIBASIC MAGNESIUM HYPOCHLORITE

John A. Wojtowicz, Cheshire, Conn., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 129,812, Mar. 12, 1980, abandoned, and a continuation-in-part of Ser. No. 968,605, Dec. 11, 1978, abandoned. This application Jul. 8, 1981, Ser. No. 281,534

The portion of the term of this patent subsequent to Jan. 31, 1995, has been disclaimed.

Int. Cl.³ C01B 11/06

U.S. Cl. 423—473 16 Claims

1. A process for the production of dibasic magnesium hypochlorite which comprises reacting a magnesium salt, an aqueous slurry of a crystalline hypochlorite salt selected from the group consisting of alkali metal hypochlorites and calcium hypochlorite, and a chloride ion source to form a reaction mixture, said slurry having a solids content of from about 10 to about 90 percent by weight of said hypochlorite salt, evolving chlorine gas from said reaction mixture, the molar ratio of magnesium ion to the hypochlorite ion being from about 0.4:1 to about 2.0:1.0 and recovering said dibasic magnesium hypochlorite therefrom.

4,380,534

SOLID DRUG PREPARATIONS

Muneo Fukui, Urawa; Yutaka Konno, Omiya; Yukio Kubota, Tokyo; Masayoshi Aruga, Ageo, and Hiroitsu Kawata, Kawagoe, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Apr. 1, 1981, Ser. No. 249,886

Claims priority, application Japan, Apr. 7, 1980, 55-46002

Int. Cl.³ A61K 9/42

U.S. Cl. 424—38 14 Claims

1. In a solid pharmaceutical composition containing less than 5 mg/dosage unit of a powdered microdose drug subject to changes in crystal form stability selected from the group consisting of gidoxin, digitoxin, β-methyl-digoxin, formoterol fumarate, procathelol, dexamethasone, β-methasone, nitroglycerin, reserpine, folic acid, cobamide, ethynylestradiol, hexoprenaline, polythiazide, diethylstilbestrol, cortisone, ergotamine, and ergometrine, the improvement comprising said powdered microdose drug being coated with a hydrophobic wax by the method comprising uniformly dispersing a powder of a microdose drug directly in molten wax and forming a powder or granule of the dispersion, or dispersing a powder of a microdose drug in a hydrophobic wax dissolved in a solvent, removing the solvent and forming a powder or granule of the residue, whereby said powdered microdose drug is stabilized against changes in crystallinity and against losses due to electrostatic charge or stickiness.

4,380,535

ENKEPHALIN DEGRADING ENZYME INHIBITORS

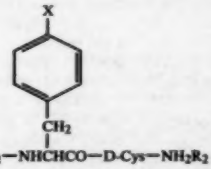
Dimitrios Sarantakis, West Chester, and William Dvonch, Radnor, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Sep. 23, 1981, Ser. No. 304,731

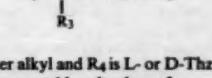
Int. Cl.³ A61K 37/00; C07C 103/52

U.S. Cl. 424—177 2 Claims

1. A method for inhibiting brain enzyme degradation of enkephalins which comprises administering to a mammal an amount sufficient to inhibit the brain enzyme degradation of said enkephalins of a compound of the formula:



wherein R_1 is hydrogen or lower alkyl; X is hydrogen, hydroxy, halo, nitro, amino or lower alkoxy; R_2 is hydrogen or



wherein R_3 is lower alkyl and R_4 is L- or D-Thz or Pro and the pharmaceutically acceptable salts thereof.

4,380,536

PHARMACEUTICAL COMPOSITION CONTAINING PARA-AMINO-BENZOIC ACID-N-D-MANNOSIDE AS AN ACTIVE INGREDIENT

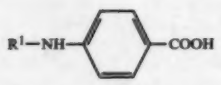
Chikao Yoshikumi, Kunitachi; Yoshio Ohmura, Funabashi; Fumio Hirose, Tokyo; Masanori Ikuzawa, Tachikawa; Kenichi Matsunaga, Tokyo; Takayoshi Fujii, Tokyo; Minoru Ohhara, Tokyo, and Takao Ando, Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 81,190, Oct. 2, 1979, Pat. No. 4,322,409, which is a continuation-in-part of Ser. No. 24,095, Mar. 26, 1979, abandoned. This application Aug. 5, 1980, Ser. No. 175,827

Int. Cl.³ A61K *31/70*

U.S. Cl. 424—180 3 Claims

1. A pharmaceutical composition in dosage unit form, which comprises a dosage amount effective for the treatment of hypertension of a compound represented by the formula:



(I)

wherein R^1 denotes the residual group formed by removing from mannose the OH at the 1-position thereof, or a pharmaceutically acceptable salt thereof, and a carrier or diluent therefor.

4,380,537

STABILIZED INSECTICIDE FORMULATIONS

Roger F. Monroe, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 935,421, Aug. 21, 1978, abandoned, which is a continuation-in-part of Ser. No. 853,779, Nov. 21, 1977, abandoned. This application Oct. 24, 1978, Ser. No. 954,258

Int. Cl.³ A01N *57/00, 57/26*

U.S. Cl. 424—200 10 Claims

1. In a solid stabilized insecticidal composition mixture which comprises from about 2 to about 40 percent by weight of an organophosphorous insecticide, a solid granular clay carrier therefor, which carrier causes deterioration of said organophosphorous insecticide mixed therewith, and a stabilizing amount of a stabilizer for said mixture, the improvement in said composition which comprises using as the stabilizer, from about 0.5 to about 10% by weight of the ultimate composition of a lactone selected from the group consisting of butyrolactone, δ-valerolactone, γ-valerolactone, γ-octanoiclactone, ϵ-caprolactone and 2-acetyl-γ-butyrolactone.

4,380,538

COMBATING ARTHROPODS WITH O-ALKYL-O-(2-CYCLOPROPYL-6-SUBSTITUTED-METHYL-PYRIMIDIN-4-YL)-(THIONO)(THIOL) PHOSPHORIC (PHOSPHONIC) ACID ESTERS AND ESTER-AMIDES

Fritz Maurer; Rolf Schröder, both of Wuppertal; Ingeborg Hammann, Cologne, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

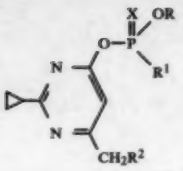
Filed Jun. 15, 1979, Ser. No. 48,857

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1978, 2830766

Int. Cl.³ A01N *57/16, 57/24, 57/32;* C07F *9/65*

U.S. Cl. 424—200 9 Claims

1. An O-alkyl-O-(2-cyclopropyl-6-substituted-methyl-pyrimidin-4-yl)-(thiono) (thiol)-phosphoric (phosphonic) acid ester or ester-amide of the formula



in which

R is alkyl with 1 to 5 carbon atoms,

R^1 is alkyl, alkoxy, alkylthio or alkylamino each with 1 to 5 carbon atoms, or phenyl,

R^2 is alkoxy or alkylthio with 1 to 5 carbon atoms, and

X is oxygen or sulphur.

4,380,539

NEMATOCIDAL COMPOSITION CONTAINING O,O-DIETHYL O-(5-PHENYLISOXAZOL-3-YL)PHOSPHOROTHIOATE AND AN ETHANIMIDOTHIOATE

Max J. Fielding, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 11, 1981, Ser. No. 242,583

Int. Cl.³ A01N *43/80;* C07D *261/12*

U.S. Cl. 424—200 4 Claims

1. A method of protecting plants from parasitic nematodes comprising applying to the locus of nematode infestation a plant protective amount of a mixture consisting essentially of:

A. O,O-diethyl O-(5-phenylisoxazol-3-yl)-phosphorothioate, and

B. at least one of:

(1) methyl N-[[(methylamino)carbonyl]oxy]ethanimidothioate, and

(2) methyl 2-(dimethylamino)-N-[[(methylamino)carbonyl]oxy]-2-oxoethanimidothioate;

the weight ratio of A to B being in the range of about 1:10 to about 10:1.

4,380,540

TABLETS

Robert H. Poyser, Old Harlow, and David H. Turner, London, both of England, assignors to Beecham Group Limited, England

Division of Ser. No. 94,503, Nov. 15, 1979, Pat. No. 4,325,971. This application Jan. 18, 1982, Ser. No. 340,041

Claims priority, application United Kingdom, Nov. 14, 1978, 44842/78

Int. Cl.³ A61K *31/615, 31/625*

U.S. Cl. 424—233 4 Claims

1. An analgesic tablet, which comprises an effective amount of acetylsalicyclic acid in combination with metoclopramide or an acid addition salt thereof, the weight ratio of acetylsalicyclic acid to metoclopramide or acid addition salt thereof being from 80:1 to 120:1, respectively.

4,380,541

CEPHALOSPORIN DERIVATIVES

Michihiko Ochiai, Suita, and Akira Morimoto, Ikeda, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

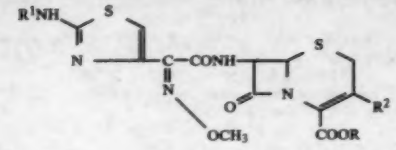
Filed Feb. 14, 1978, Ser. No. 877,760

Claims priority, application Japan, Feb. 18, 1977, 52-17501

Int. Cl.³ C07D *501/20;* A61K *31/545*

U.S. Cl. 424—246 10 Claims

1. A compound of the formula:



wherein R^1 is hydrogen; R^2 is chloro, methoxy or methylthio and R is hydrogen or pivaloyloxymethyl and pharmacologically and pharmaceutically acceptable salts thereof.

4,380,542

9-HYDROXYOCTAHYDROBENZO[c]QUINOLINES AND THEIR PHARMACEUTICAL COMPOSITIONS AND METHOD OF USE

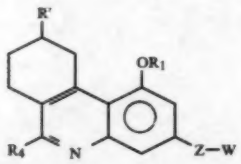
Michael R. Johnson, Gales Ferry, Conn., assignor to Pfizer, New York, N.Y.

Division of Ser. No. 193,822, Oct. 3, 1980, Pat. No. 4,340,737, which is a division of Ser. No. 42,773, May 29, 1979, Pat. No. 4,260,764, which is a continuation-in-part of Ser. No. 777,928, Mar. 15, 1977, abandoned, which is a continuation-in-part of Ser. No. 753,619, Dec. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 687,332, May 17, 1976, abandoned. This application Dec. 9, 1981, Ser. No. 328,846

Int. Cl.³ C07D *221/12;* **A61K** *31/47*

U.S. Cl. 424—248.55 **8 Claims**

1. A compound having the formula:



wherein R' is selected from the group consisting of hydroxy; alkanoyloxy having from one to five carbon atoms; hydroxymethyl; oxo, methylene and alkylenedioxy having from two to four carbon atoms;

R_1 is selected from the group consisting of hydrogen, benzyl, benzoyl, alkanoyl having from one to five carbon atoms and —CO—$(CH_2)_p$—NR_2R_3 wherein p is 0 or an integer from 1 to 4; each of R_2 and R_3 when taken individually is selected from the group consisting of hydrogen and alkyl having from one to four carbon atoms; R_2 and R_3 when taken together with the nitrogen to which they are attached form a 5- or 6-membered heterocyclic ring selected from the group consisting of piperidino, pyrrolo, pyrrolidino, morpholino and N-alkylpiperazino having from one to four carbon atoms in the alkyl group;

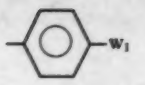
R_4 is selected from the group consisting of hydrogen, alkyl having from 1 to 6 carbon atoms and —$(CH_2)_z$—C_6H_5 wherein z is an integer from 1 to 4;

Z is selected from the group consisting of

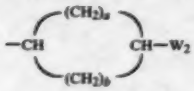
(a) alkylene having from one to nine carbon atoms;

(b) - $(alk_1)_m$-X-$(alk_2)_n$—wherein each of (alk_1) and (alk_2) is alkylene having from one to nine carbon atoms, with the proviso that the summation of carbon atoms in (alk_1) plus (alk_2) is not greater than nine; each of m and n is 0 or 1; X is selected from the group consisting of O, S, SO and SO_2; and

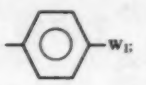
W is selected from the group consisting of hydrogen, methyl, pyridyl, piperidyl,



wherein W_1 is selected from the group consisting of hydrogen, fluoro and chloro; and

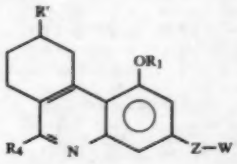


wherein W_2 is selected from the group consisting of hydrogen and



a is an integer from 1 to 5 b is 0 or an integer from 1 to 5; with the proviso that the sum of a and b is not greater than 5.

7. A process for producing analgesia in a mammal which comprises administering to the mammal an analgesic producing quantity of a compound selected from the group consisting of those having the formula



and the pharmaceutically acceptable acid addition salts thereof,

wherein

R_1 is selected from the group consisting of hydrogen, benzoyl, alkanoyl having from one to five carbon atoms and —CO- $(CH_2)_p$—NR_2R_3 wherein p is 0 or an integer from 1 to 4; each of R_2 and R_3 when taken individually is selected from the group consisting of hydrogen and alkyl having from one to four carbon atoms; R_2 and R_3 when taken together with the nitrogen to which they are attached form a 5- or 6-membered heterocyclic ring selected from the group consisting of piperidino, pyrrolo, pyrrolidino, morpholino and N-alkylpiperazino having from one to four carbon atoms in the alkyl group;

R_4 is selected from the group consisting of hydrogen, alkyl having from 1 to 6 carbon atoms and —$(CH_2)_z$—C_6H_5 wherein z is an integer from 1 to 4;

R_5 is selected from the group consisting of hydrogen, methyl and ethyl;

R_6 is selected from the group consisting of hydrogen, —$(CH_2)_y$—carbalkoxy having from one to four carbon atoms in the alkoxy group and wherein y is 0 or an integer from 1 to 4, carbobenzyloxy, formyl, alkanoyl having from two to five carbon atoms, alkyl having from one to six carbon atoms and —$(CH_2)_x$—C_6H_5 wherein x is an integer from 1 to 4; and $CO(CH_2)_{x-1}$—C_6H_5;

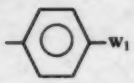
Z is selected from the group consisting of

(a) alkylene having from one to nine carbon atoms;

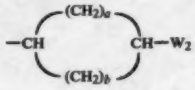
(b) —$(alk_1)_m$—X—$(alk_2)_n$—wherein each of (alk_1) and (alk_2) is alkylene having from one to nine carbon atoms, with the

proviso that the summation of carbon atoms in (alk_1) plus (alk_2) is not greater than nine; each of m and n is 0 or 1; X is selected from the group consisting of O, S, SO and SO_2; and

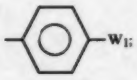
W is selected from the group consisting of hydrogen, methyl, pyridyl, piperidyl,



wherein W_1 is selected from the group consisting of hydrogen, fluoro and chloro; and



wherein W_2 is selected from the group consisting of hydrogen and



a is an integer from 1 to 5 and b is 0 or an integer from 1 to 5; with the proviso that the sum of a and b is not greater than 5; and

R′ is selected from the group consisting of hydroxy, alkanoyloxy having 1 to 5 carbon atoms, hydroxymethyl, oxo, alkylene dioxy having from 2 to 4 carbon atoms and methylene.

4,380,543

ANTIMICROBIAL 8-CYANO-6,7-DIHYDRO-5-METHYL-1-OXO-1H,5H-BENZO[ij]QUINOLIZINE-2-CARBOXYLIC ACIDS

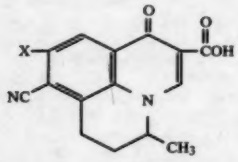
Richard M. Stern, Cottage Grove, Minn., assignor to Riker Laboratories, Inc., St. Paul, Minn.

Filed Nov. 6, 1981, Ser. No. 318,928

Int. Cl.³ A61K *31/47*; C07D *455/04*

U.S. Cl. 424—258 **5 Claims**

1. A compound of the formula:



wherein X is hydrogen or fluorine, or a pharmaceutically acceptable carboxylate salt thereof, an alkyl or alkylaminoalkyl ester thereof where the alkyl group contains 1 to 4 carbon atoms, an alkylaminoalkyl ester salt thereof where the alkyl group contains 1 to 4 carbon atoms, an acyl chloride thereof, or an amide thereof having the formula $—NR_1R_2$ where R_1 and R_2 are independently hydrogen or an alkyl group containing 1 to 4 carbon atoms.

5. A composition for inhibiting the growth of microorganisms comprising an effective amount of the compound according to claim 1 formulated in a pharmaceutically-acceptable vehicle.

4,380,544

1,3-DIOXOLANE COMPOUNDS AND THEIR USE AS FUNGICIDES

Franz Dorn, Dielsdorf, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

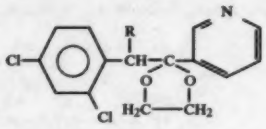
Filed Mar. 25, 1982, Ser. No. 361,682

Claims priority, application Switzerland, Mar. 30, 1981, 2142/81; Feb. 11, 1982, 855/82

Int. Cl.³ A01N *43/40*; C07D *405/06*

U.S. Cl. 424—263 **9 Claims**

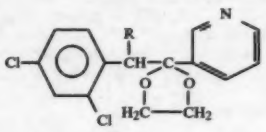
1. A compound of the formula



I

wherein R is hydrogen or C_{1-4}-alkyl,
or an acid addition salt thereof.

4. A fungicidal composition comprising a compatible carrier material and, as the active ingredient, an amount which is effective as a fungicide of a compound of the formula



I

wherein R is hydrogen or C_{1-4}-alkyl,
or an acid addition salt thereof.

4,380,545

COMBATING FUNGI WITH TRIAZOLYL-BENZYLOXY-KETONES AND-CARBINOLS

Udo Kraatz; Gerhard Jäger, both of Leverkusen; Karl H. Büchel, Burscheid, and Paul-Ernst Frohberger, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

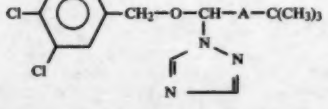
Filed Mar. 19, 1981, Ser. No. 245,288

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1980, 3012824

Int. Cl.³ A01N *43/64, 55/00*; C07D *249/08*

U.S. Cl. 424—269 **6 Claims**

1. A triazolyl-benzyloxy-ketone or carbinol of the formula



in which A is a keto group or a CH(OH) group,
or an addition product thereof with a physiologically acceptable acid or metal salt.

5. A method of fungi comprising applying to the fungi or to a habitat thereof a fungicidally effective amount of a compound according to claim 1.

4,380,546

AZOLE COMPOUNDS, THEIR PREPARATION, THEIR USE FOR CROP TREATMENT, AND AGENTS FOR THIS PURPOSE

Hubert Sauter, Mannheim; Eberhard Ammermann, Ludwigshafen; Costin Rentzea, Heidelberg; Bernd Zeeh, Ludwigshafen; Johann Jung, and Ernst-Heinrich Pommer, both of Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

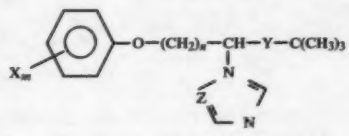
Filed Apr. 29, 1981, Ser. No. 258,789

Claims priority, application Fed. Rep. of Germany, May 19, 1980, 3019049

Int. Cl.³ A01N *43/50, 43/64;* C07D *233/60, 249/08*

U.S. Cl. 424—269 9 Claims

1. An azole compound of the formula



(I)

where X is hydrogen, halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, trifluoromethyl or phenyl and m is an integer from 1 to 5, and, if m is greater than 1, the X's can be identical or different, n is an integer from 2 to 5, Z is N or CH and Y is CO or CR^1OR^2, where R^1 is hydrogen or C_1–C_4-alkyl and R^2 is hydrogen, C_1–C_4-alkyl, C_2–C_4-alkenyl, C_2–C_4-alkynyl, as well as its addition salts with acids.

2. A plant treatment agent having fungicidal and growth regulating properties comprising a solid or liquid carrier and an effective amount of a compound of the formula I as described in claim 1.

4. A process for treating fungus diseases in plants which comprises: applying to the plants a fungicidally effective amount of a compound of the formula I as described in claim 1.

4,380,547

DIHYDROPYRIDINE COMPOUNDS WHICH ARE SUBSTITUTED IN THE 4-POSITION BY IMIDAZOLYL OR THIAZOLYL AND THEIR MEDICINAL USE

Carsten Materne, Bonn, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

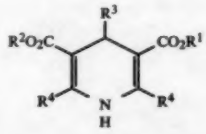
Filed May 29, 1981, Ser. No. 268,416

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1980, 3022030

Int. Cl.³ A61K *31/425;* C07D *417/00*

U.S. Cl. 424—270 11 Claims

1. A compound which is a 1,4-dihydropyridine of the formula



(I)

in which

R^3 represents imidazolyl or thiazolyl which is optionally substituted by alkyl with 1 to 4 carbon atoms or phenyl

R^4 represents in both instances methyl, ethyl, phenyl or benzyl,

R^1 and R^2 are identical or different and represent a straight-chain or branched saturated hydrocarbon radical which has up to 6 carbon atoms and is optionally interrupted in their chain by an oxygen atom and/or is optionally substituted by fluorine or chlorine.

9. A method of combating circulatory illnesses in warm-blooded animals which comprises administering to the animals an amount effective for vasodilating, of a compound according to claim 1 either alone or in admixture with an inert pharmaceutical carrier or in the form of a medicament.

4,380,548

N-(2,6-DIMETHYLPHENYL)-4,5-DIHYDRO-4,4-DIALKYL-2-METHYLTHIO-1H-IMIDAZOLE-1-CARBOXAMIDES, ANTICONVULSIVE COMPOSITION AND METHOD

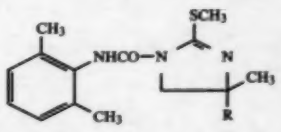
Robert W. Fleming, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Aug. 27, 1981, Ser. No. 296,764

Int. Cl.³ A61K *31/415;* C07D *233/42*

U.S. Cl. 424—273 R 5 Claims

1. A compound having the structural formula



wherein R is hydrogen or methyl, and the pharmaceutically acceptable acid addition salts thereof.

4,380,549

TOPICAL TREATMENT OF DRY SKIN

Eugene J. Van Scott, 1138 Sewell La., Rydal, Pa. 19046, and Ruey J. Yu, 4 Lindenwold Ave., Ambler, Pa. 19002

Continuation of Ser. No. 60,460, Jul. 25, 1979, abandoned, which is a continuation-in-part of Ser. No. 870,114, Jan. 17, 1978, Pat. No. 4,197,316, which is a division of Ser. No. 720,835, Sep. 7, 1976, Pat. No. 4,105,783, which is a continuation-in-part of Ser. No. 598,224, Jul. 23, 1975, Pat. No. 4,021,572. This application Mar. 23, 1981, Ser. No. 246,364

The portion of the term of this patent subsequent to Apr. 22, 1992, has been disclaimed.

Int. Cl.³ A61K *31/19*

U.S. Cl. 424—317 12 Claims

1. A method for alleviating the symptoms of dry skin in humans comprising topically applying to involved areas of the human body an effective amount of at least one member selected from the group consisting of:

Glycolic Acid	Malic Acid
Glucuronic Acid	Mucic Acid
Galacturonic Acid	Citric Acid
Gluconic Acid	Saccharic Acid
Glucoheptonic Acid	Tartaric Acid
α-Hydroxybutyric Acid	Tartronic Acid
α-Hydroxyisobutyric Acid	Isocitric Acid
α-Hydroxyisocaproic Acid	Dihydroxymaleic Acid
α-Hydroxyisovaleric Acid	Dihydroxytartaric Acid
β-Hydroxybutyric Acid	Dihydroxyfumaric Acid
[Lactic Acid]	
β-Phenllactic Acid	
Atrolactic Acid	
Mandelic Acid	
Galactonic Acid	
Pantoic Acid	
Glyceric Acid	

or a salt thereof with an organic or inorganic alkali, in a pharmaceutically acceptable vehicle.

4,380,550

GUANFACINE IN TREATING OPIATE ADDICTION

Horst Kleinlogel, Hinterkappelen, and Carl Theobar, Basel, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

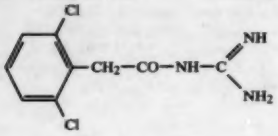
Filed May 28, 1982, Ser. No. 383,080

Claims priority, application United Kingdom, Jun. 1, 1981, 8116751

Int. Cl.³ A61K *31/165*

U.S. Cl. 424—324 5 Claims

1. A method of treating symptoms arising on withdrawal of opiate administration from an opiate addict which method comprises administering to said subject an effective amount of Guanfacine of the formula I:



I

in free base form or in pharmaceutically acceptable acid addition salt form.

4,380,551

METHODS OF PRODUCING FOODSTUFF BY MALTING SEEDS

Stanislaw Frontczak, Lodz, Poland, assignor to Jacek Długolecki, Poland, a part interest

Filed Aug. 27, 1980, Ser. No. 181,816

Claims priority, application United Kingdom, Jul. 31, 1980, 8025083

The portion of the term of this patent subsequent to Mar. 30, 1999, has been disclaimed.

Int. Cl.³ A23K *1/00, 1/14*

U.S. Cl. 426—28 18 Claims

1. A method of producing a foodstuff for human or animal consumption, comprising the steps of:

forming a layer of peat having a thickness in the range of about 40 to about 200 millimeters on a surface substantially impermeable to plant roots;

sowing into the peat layer seeds of at least one quick germinating plant of a type such as to produce strong root systems at a rate of at least about 900 kilograms of seeds per hectare; and

vegetating the seeds for a period in the range of from 10 to 21 days;

whereby the layer of peat with germinated seeds in usable as a foostuff.

4,380,552

METHOD OF DEACIDIFYING WINE AND COMPOSITION THEREFOR

Stina M. Gestrelius, Lund, Sweden, and Jörgen H. Kjaer, Copenhagen, Denmark, assignors to Novo Industri A/S, Bagsvaerd, Denmark

Filed Oct. 27, 1980, Ser. No. 201,227

Int. Cl.³ C12P *7/56;* C12N *11/10, 1/36;* C12G *1/00*

U.S. Cl. 426—52 6 Claims

1. A process for deacidifying wine with alginate gel particles containing living cells of *Leuconostoc oenos* immobilized herein, and said alginate gel particles being immersed in an aqueous sterile resting medium for maintaining viability of the microorganism which process comprises:

i. preparing a bed of said alginate gel particles, then

ii. displacing gradually said resting medium in the alginate gel particles with wine thereby conditioning the living cells to wine and thereafter

iii. passing wine through said bed to deacidify the wine by the malolactic activity of the microorganism cells.

4,380,553

METHOD OF IMPARTING A REDDISH COLOR TO SEASONING SALTS

Thomas R. Schmidt, Niles, Mich., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Sep. 3, 1981, Ser. No. 299,192

Int. Cl.³ A23L *1/237*

U.S. Cl. 426—250 6 Claims

1. A method of treating granulated seasoning salt to impart a reddish hue thereto which method involves the steps of:

(a) providing a basic, aqueous solution of annatto;

(b) adding a food grade acid to the basic solution to lower the pH thereof to a point sufficient to precipitate the annatto and form an aqueous slurry thereof;

(c) combining the annatto slurry with the granulated seasoning salt and blending the resultant combination to thereby plate the salt with the precipitated annatto; and

(d) allowing the plated salt to dry.

4,380,554

POLYMERIC MONOHYDROXYBENZENOID HYDROQUINOID ANTIOXIDANTS

Carl Serres, Jr., Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 51,450, Jun. 25, 1979, Pat. No. 4,310,657. This application Jul. 21, 1981, Ser. No. 285,602

Int. Cl.³ C11B *5/00*

U.S. Cl. 426—545 13 Claims

1. A composition comprising a monohydroxybenzenoid hydroquinoid polymer and an oxidizable organic material normally subject to adverse effects by oxygen selected from the group consisting of edible lipids including animal and vegetable fats and oils, wherein the said oxidizable organic material is stabilized against oxidative degradation by a stabilizing amount of said monohydroxybenzenoid hydroquinoid polymer which is of the formula

wherein R is a benzenoid ring group selected from the group consisting of benzene, naphthalene, biphenyl, diphenylmethane, thiophene, benzothiophene and dibenzothiophene moieties, wherein Ar is a benzenoid ring group selected from the group consisting of phenyl, naphthyl, anthranyl and phenanthranyl groups, and wherein R' is an alkyl group of 9 to 18 carbon atoms, and R'', R''', R'''' and R''''' are independently selected from a group consisting of hydrogen, alkyls of one to 26 carbon atoms and aralkyls of from 7 to 26 carbon atoms, x and y are of the ratio of from 1:1 to 1:3 and n is an integer of from one to 20.

4,380,555

SUCROGLYCERIDE ON A SUPPORT

Jean-Claude Campagne; Jean Chollet, and Pierre Redien, all of Melle, France, assignors to Rhone Poulenc Industries, Paris, France

Filed Mar. 19, 1981, Ser. No. 245,443

Claims priority, application France, Mar. 24, 1980, 80 06463

Int. Cl.³ A21D *2/00;* A23D *5/00*

U.S. Cl. 426—549 22 Claims

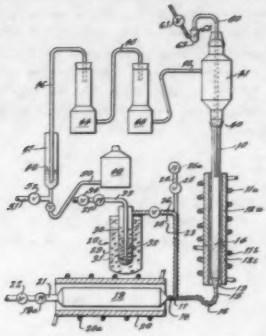
1. A powder preparation, comprising 20 to 40% of a sucroglyceride on a support, said support comprising 10 to 50% of an edible salt of casein, and 20 to 60% of a maltodextrin.

4,380,556

VAPOR DEPOSITION OF HARDENED NIOBIUM

John M. Blocher, Jr.; Neil D. Veigel, and Richard B. Landrigan, all of Columbus, Ohio, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 3, 1964, Ser. No. 335,696
Int. Cl.³ G21C 3/06; B05D 7/00; B05C 19/02
U.S. Cl. 427—6 10 Claims



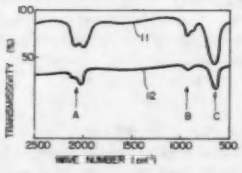
1. A method of coating particles of ZrO_2-UO_2 mixtures with hardened niobium, comprising placing the particles in a fluidized bed, maintaining the temperatures of the bed at from about 800° C. to about 900° C., leading niobium pentachloride vapor and carbon tetrachloride vapor into the bed, whereby niobium metal is deposited as a coating on the particles and carbon is deposited interstitially within the niobium.

4,380,557

METHOD OF PRODUCTION OF IMAGE PICKUP DEVICE

Sachio Ishioka, Tokyo; Yasuharu Shimomoto, Hinodemachi; Yoshinori Imamura, Hachioji; Saburo Ataka, Hinodemachi; Yasuo Tanaka, Kokubunji; Hirokazu Matsubara, Hamuramachi; Yukio Takasaki, Hachioji, and Eiichi Maruyama, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 28, 1981, Ser. No. 287,554
Claims priority, application Japan, Jul. 28, 1980, 55-102529
Int. Cl.³ B05D 3/02, 3/04
U.S. Cl. 427—38 6 Claims



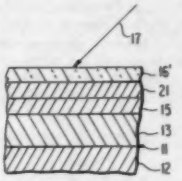
1. A method of producing an image pickup device, which comprises the steps of forming a hydrogen-containing amorphous silicon layer on a predetermined substrate and heating the amorphous silicon layer at a temperature of from 100° to 300° C., said hydrogen-containing amorphous silicon containing hydrogen in an amount of 5 to 30 atomic % and having an optical forbidden band gap of from 1.30 eV to 1.95 eV, and in the infrared absorption spectrum of the hydrogen-containing amorphous silicon, the component of a wave number of about 2000 cm^{-1} being larger than the component of a wave number of about 2100 cm^{-1}.

4,380,558

PROCESS FOR MANUFACTURING A PROTECTIVE POLYSILICATE LAYER OF A RECORD MEMBER BY A LASER BEAM AND A MAGNETIC RECORD MEMBER SUITABLY MANUFACTURED THEREBY

Masahiro Yanagisawa, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Sep. 30, 1980, Ser. No. 192,566
Claims priority, application Japan, Oct. 2, 1979, 54-127626; Dec. 20, 1979, 54-165933; Dec. 20, 1979, 54-165934; Dec. 24, 1979, 54-167848
Int. Cl.³ B05D 3/06
U.S. Cl. 427—53.1 13 Claims



1. In a process for manufacturing a magnetic record member comprising the steps of preparing a substrate of at least one non-magnetic metal material, forming a film of a magnetic material on said substrate in direct contact therewith, forming a layer of a solution of tetrahydroxysilane on said film, and treating said layer of solution into a layer of polysilicate, said magnetic material being capable of retaining magnetization as records of electrical signals in said film for reproduction of said electrical signals, the improvement wherein said treating step comprises the steps of:

pre-baking said layer of solution at a temperature in the range of 100 to 300 degrees centigrade to provide a pre-baked layer in a manner such that the magnetic properties of said substrate and said film are not varied to adversely affect the recording and the reproducing characteristics of said film; and

irradiating said pre-baked layer with a carbon dioxide laser beam to provide said polysilicate layer, said laser beam having a wavelength between 4 microns and 50 microns.

4,380,559

METHOD FOR PRODUCING BOUNDARY LAYER SEMICONDUCTOR CERAMIC CAPACITORS

Haruhumi Mandai, Nagaokakyo; Kunitaro Nishimura, Youkaichi; Yoshiaki Kohno, Uji, and Masami Yamaguchi, Nagaokakyo, all of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Sep. 25, 1980, Ser. No. 190,711
Int. Cl.³ H01G 4/10, 4/12
U.S. Cl. 427—80 10 Claims

1. A method for producing boundary layer semiconductor ceramic capacitors, comprising the steps of:

firing shaped bodies of a semiconductor ceramic material in a neutral or reducing atmosphere;

heat-treating the resultant semiconductor ceramic bodies to insulatorize crystal grain boundaries of the semiconductor ceramics; and

providing opposite electrodes on surfaces of the heat-treated semiconductor ceramic bodies;

characterized in that said heat-treating is carried out by heating the semiconductor ceramic bodies together with powder of the insulatorizing agent with stirring in a neutral or oxidizing atmosphere.

4,380,560

PROCESS FOR TREATMENT OF BLACK PLATE CONTAINERS

Peter F. King, Farmington Hills, Mich., assignor to Occidental Chemical Corporation, Warren, Mich.

Filed Dec. 17, 1981, Ser. No. 331,487
Int. Cl.³ B05D *1/18, 1/38, 7/22, 7/26*
U.S. Cl. 427—239 **20 Claims**

1. A process for treating black plate containers to improve corrosion resistance and lacquer adherence which comprises the steps of providing a formed black plate container body, cleaning the surfaces of the body to remove contaminants therefrom, contacting the clean body surfaces with an aqueous acidic solution containing stannous ions in an amount of about 0.01% up to saturation at a temperature of about room temperature to about 200° F. for a period of time to deposit tin on the body surfaces in an amount up to about 5 mg/ft^2 without visually changing the shiny grey surface appearance thereof, water rinsing and drying the treated body, and thereafter applying an organic lacquer coating to the dry, treated body surfaces.

4,380,561

TREATMENT OF WOOD USING BRANCHED-CHAIN ALIPHATIC CARBOXYLIC ACIDS

Carl-Erik Sundman, Nacka, and Bengt G. Hägglund, Södertälje, both of Sweden, assignors to KenoGard A.B., Stockholm, Sweden

Filed Mar. 31, 1981, Ser. No. 249,658
Claims priority, application Sweden, Apr. 28, 1980, 8003219
Int. Cl.³ C09D *5/14*
U.S. Cl. 427—421 **3 Claims**

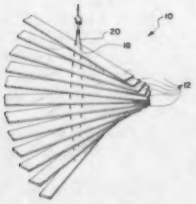
1. A method for treating wood and woodbased materials such as particle board and board, for protection against attack of sapstain and mould fungi by means of dipping, spraying or brushing wherein said materials are treated with a composition which consists of water and, as its active ingredient, a branched-chain aliphatic carboxylic acid, or its alkali- or ammonium salt, which acid contains totally 6 to 20 carbon atoms, wherein the acid is an isoacid or a 2- position mono-branched acid.

4,380,562

KINETIC WAVEFORM DEVICE

William A. Bream, 600 W. Aycock St., Raleigh, N.C. 27608

Filed Feb. 18, 1981, Ser. No. 235,681
Int. Cl.³ A47G *33/04*
U.S. Cl. 428—8 **9 Claims**



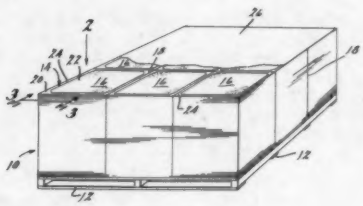
1. A kinetic waveform device adapted to be vertically oriented and capable of providing various and continually varying waveform shapes and as vertically oriented, comprising: a plurality of vertically spaced and generally elongated slats extending through a substantial vertical distance with said slats being generally uniformly vertically shaped; at least two transversely spaced, vertical openings formed through each slat intermediately between opposite ends and wherein said vertical openings are equidistance from the midpoint of each slat; a pair of axis threads extending vertically through said transversely spaced vertical openings within said slats forming said waveform device; attaching means for securing said slats to said axis threads such that said slats are suspended along said axis threads in generally uniform vertically spaced apart relationship and are free to twist about said axis threads such that the shape of said waveform device can vary throughout its vertical distance and continue to vary throughout its vertical distance in order that the kinetic waveform device may continuously produce different waveform shapes; anchoring means secured to at least one end of said axis threads for vertically anchoring said waveform device; and wherein said openings in said respective slats are formed such that at least one opening lies on each side of the midpoint of each slat and wherein said openings are spaced relatively close together relative to the length of the respective slats such that the slats may tend to generally revolve about an axis that would extend between said pair of threads.

4,380,563

ADHESIVE DEVICE OF FELT SUBSTRATE, RELEASE SHEET AND ADHESIVE AND METHOD

Gordon R. Ayotte, Marshall, Mich., assignor to Trim Parts Inc., Marshall, Mich.

Filed Mar. 1, 1982, Ser. No. 353,430
Int. Cl.³ B32B *7/14*; D04H *1/08*
U.S. Cl. 428—40 **20 Claims**



7. An adhesive device for use in providing sound deadening, insulation, or the like comprising a plurality of laminates, each of which comprises:

(a) a felt substrate,

(b) release paper attached to one side of said felt substrate to form a sheet having a felt side exposed and a release side of said release paper exposed, said sheet being divided into sections by a cut extending through all but at least one connecting tab between adjacent sections on said sheet, and

(c) adhesive applied to all but a peripheral edge portion of the other side of said felt substrate on each of said sections, wherein said laminates are stacked so that the adhesive on one laminate is adjacent the exposed release side of said release paper on another laminate.

4,380,564

CROSS-TEARABLE DECORATIVE SHEET MATERIAL

Leopoldo V. Cancio, and Pai-Chuan Wu, both of Cincinnati, Ohio, assignors to Clopay Corporation, Cincinnati, Ohio

Continuation-in-part of Ser. No. 57,792, Jul. 16, 1979, Pat. No. 4,298,647. This application Aug. 5, 1981, Ser. No. 290,354
The portion of the term of this patent subsequent to Nov. 3, 1998, has been disclaimed.
Int. Cl.³ B32B *3/30, 27/20*
U.S. Cl. 428—167 **20 Claims**

1. A method of producing a plastic film which may be torn by hand along one or more hand-tear lines without the use of cutting tools comprising the steps of:

providing a polymeric material,

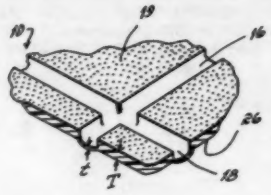
introducing into said polymeric material a material forming

a dispersed second phase in a matrix of said polymeric material,

forming said polymeric material containing said dispersed second phase into a film, and

embossing said film to form one or more substantially continuous, imperforate hand-tear lines of reduced film thickness therein,

said material forming said dispersed second phase being present in said film in an amount effective to initiate and propagate tear along said hand-tear lines by hand-tearing without the use of cutting tools.



14. A hand-tearable plastic film which may be torn by hand along one or more hand-tear lines without the use of cutting tools comprising an embossed polymeric film having one or more substantially continuous imperforate hand-tear lines of reduced film thickness, said film being formed of a polymeric matrix containing a dispersed second phase in an amount effective to initiate and propagate tear along said hand-tear lines such that said film may be torn by hand without the use of cutting tools.

4,380,565
COLOR PRESERVATION OF WAX-COATED PAPERBOARD

Paul L. Krankkala, Woodbury, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Jan. 8, 1982, Ser. No. 338,020
Int. Cl.³ B32B *3/28, 29/00*
U.S. Cl. 428—182 **12 Claims**

1. An improved wax-coated cellulosic product which comprises a paper or paperboard substrate bearing in order: (1) an intermediate layer consisting essentially of a mixture of (A) a fluorinated organic phosphate compound of the formula

$$(R_fL)_3\text{-}yZ$$

wherein

R_f is $R_2(CF_2)_a$ where R_2 is F or H and a is an integer from 1 to 20, $(CF_3)_2CR_3(CF_2)_b$ where R_3 is F or H when b is O and R_3 is F when b is an integer from 1 to 18, or $R_4(c\text{-}C_6F_{10})$ where R_4 is F or C_nF_{2n+1} in which n is an integer from 1 to 4 and c-designates an alicyclic structure,

L is

$$-SO_2N(R_5)-(CH_2)_2O-$$

where R_5 is an alkyl group having from 1 to 10 carbon atoms, or the group

$$-(CH_2)_nO-$$

where n is a integer 1 or 2,

y is an integer 1 or 2, and Z is $P(O)(OM)_x$ where x is the integer 1 or 2, and M is a water-solubilizing cation selected from the group consisting of alkali metal, ammonium and substituted ammonium when x is 1, and each M is independently selected from the group consisting of hydrogen, alkali metal, ammonium and substituted ammonium when x is 2, in an amount of between about 0.01 to about 0.12 pounds per thousand square feet of said intermediate layer and (B) a nonionic surfactant of the poly(oxypropylene)-poly(oxyethylene) block copolymer type in an amount of between about 0.015 and about 0.18 pounds per thousand square feet of said intermediate layer; and (2) an outer layer of wax.

7. A process for preparing an improved wax-coated cellulosic product which comprises the steps of: (1) providing a paper or paperboard substrate: (2) coating the substrate with a mixture consisting essentially of (A) a fluorinated organic phosphate having the formula

$$(R_fL)_{3-y}Z$$

wherein

R_f is $R_2(CF_2)_a$ where R_2 is F or H and a is an integer from 1 to 20, $(CF_3)_2CR_3(CF_2)_b$ where R_3 is F or H when b is O and R_3 is F when b is an integer from 1 to 18, or $R_4(c\text{-}C_6F_{10})$ where R_4 is F or C_nF_{2n+1} in which n is an integer from 1 to 4 and c-designates an alicyclic structure,

L is

$$-SO_2N(R_5)-(CH_2)_2O-$$

where R_5 is an alkyl group having from 1 to 10 carbon atoms, or the group

$$-(CH_2)_nO-$$

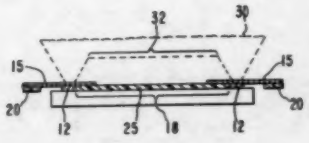
where n is an integer 1 or 2, y is an integer 1 or 1, and

Z is $P(O)(OM)_x$ where x is the integer 1 or 2, and M is a water-solubilizing cation selected from the group consisting of alkali metal, ammonium and substituted ammonium when x is 1, and each M is independently selected from the group consisting of hydrogen, alkali metal, ammonium and substituted ammonium when x is 2, in an amount of between about 0.01 and about 0.2 pounds, per thousand square feet, and (B) a poly(oxypropylene)poly(oxethylene)block copolymer surfactant in an amount of between about 0.015 and about 0.18 pounds per thousand square feet of said intermediate layer and drying the resulting coated substrate; and (3) coating said coated substrate with molten wax.

4,380,566
RADIATION PROTECTION FOR INTEGRATED CIRCUITS UTILIZING TAPE AUTOMATED BONDING

William S. Phy, Los Altos Hills, Calif., assignor to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Filed Jul. 13, 1981, Ser. No. 282,569
Int. Cl.³ B32B *23/02, 15/08*
U.S. Cl. 428—192 **8 Claims**



1. A composite structure for use in fabricating electrical connections to an integrated circuit comprising:

an insulating substrate having a central portion adapted to be disposed in proximity to the surface of the integrated circuit and having a peripheral portion disposed about at least part of the central portion, the peripheral portion being separated from the central portion at selected locations; and

a pattern of electrically conductive material disposed on at least the peripheral portion of the insulating substrate whereby the pattern of electrically conductive material is adapted to be connected to the integrated circuit where the peripheral portion is separated from the central portion, and the central portion of the insulating substrate is disposed in proximity to the integrated circuit.

4,380,567

ETHYLENIC COMPOSITE FILM STRUCTURE

Hiromi Shigemoto, Iwakuni, Japan, assignor to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Sep. 30, 1981, Ser. No. 307,206
Claims priority, application Japan, Oct. 9, 1980, 55/140488
Int. Cl.³ B32B *27/00*
U.S. Cl. 428—213 **7 Claims**

1. A composite film structure composed of a layer (A) of high density polyethylene having an intrinsic viscosity [η] as measured in decalin at 135° C. of 1.3–2.9 dl/g, a melt index (MI_A) of 0.3–7.0 g/10 min. and a density of 0.950–0.970 g/cm^3, in which up to 2 mole % of an alpha-olefin may be contained; and layers (B) of an ethylene/C_5–C_{10} alpha-olefin random copolymer having an intrinsic viscosity [η] as measured in decalin at 135° C. of 1.0–2.4 dl/g, a melt index (MI_B) of 0.5–20 g/10 min., a density of 0.910–0.940 g/cm^3, and a melting point of 115°–130° C., with the proviso that the MI_A/MI_B ratio is 0.15–4.0, said layers (B) being in direct contact with the two sides of said layer (A) and laminated thereto.

4,380,568

FLAME RETARDANT HEAT INSULATING COMPOSITION AND METHOD FOR PREPARING THE SAME

Shuji Masuda, Tokushima, and Keisuke Ueno, Kawasaki, both of Japan, assignors to Chugai Boyeki Co., Ltd., Tokyo, Japan

Filed Mar. 23, 1981, Ser. No. 246,411
Int. Cl.³ B32B *7/00*
U.S. Cl. 428—276 **6 Claims**

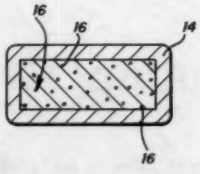
1. A flame-retardant heat insulating composition essentially consisting of fibrous cellulose particles, wherein the ratio of cellulose fibers to cellulose particles is in the range of 90:10 to 30:70 by weight in the absolute dry state, bonded only with 5 to 20 wt. percent of condensed phosphate as binder into fiberfil form.

4,380,569

LIGHTWEIGHT PREFORMED STABLE GEL STRUCTURES AND METHOD OF FORMING

Robert E. Shaw, Waco, Tex., assignor to Spenco Medical Corporation, Waco, Tex.

Filed Aug. 3, 1981, Ser. No. 289,223
Int. Cl.³ B32B *5/16*
U.S. Cl. 428—283 **35 Claims**



1. The method of forming a lightweight stable gel comprising the steps of:

(a) preparing at low temperature a gel mixture by admixing;

(i) methyl polysiloxane containing silicon-bonded vinyl groups, with

(ii) methyl polysiloxane containing SiH groups, and

(iii) a platinum catalyst;

(b) mixing glass microspheres into said gel mixture;

(c) pouring the resulting mixture into a mold of desired shape; and

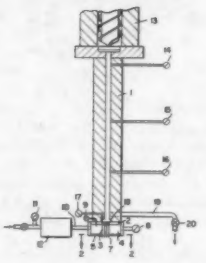
(d) allowing the resulting mixture to react until a stable silicon gel structure is formed.

4,380,570

APPARATUS AND PROCESS FOR MELT-BLOWING A FIBERFORMING THERMOPLASTIC POLYMER AND PRODUCT PRODUCED THEREBY

Eckhard C. A. Schwarz, 115 N. Park Ave., Neenah, Wis. 54956

Filed Apr. 8, 1980, Ser. No. 138,860
Int. Cl.³ D04H *1/04*
U.S. Cl. 428—296 **15 Claims**



1. In a process for producing melt blown fibers from a molten fiberforming thermoplastic polymer and wherein said molten fiberforming thermoplastic polymer is further heated and extruded through orifices of heated nozzles into a stream of hot gas to attenuate said molten polymer into fibers forming a fiber stream and wherein said fiber stream is collected on a receiver surface in the path of said fiber stream to form a non-woven mat, the improvement, which comprises:

(a) passing said molten polymer through an elongated channel and thence through a plurality of sub-channels to a molten polymer feed chamber, said molten polymer having a resident time through said channels of less than 30 seconds;

(b) heating said molten polymer during step (a) to a temperature whereby

$a\Sigma l/Q$ is smaller than 0.1,

wherein;

a is the thermal diffusivity of said molten polymer,

l is the length of each polymer channel, and

Q is the polymer flow rate in each polymer channel;

(c) passing said thus heated molten polymer from said feed chamber through a plurality of heated nozzles to form said melt blown fibers, said molten polymer having a residence time in said heated nozzles of less than 2 seconds; and

(d) further heating said thus heated molten polymer, during step (c) to a temperature whereby

$a\Sigma l/Q$ is greater than 0.07,

wherein;

a is the thermal diffusivity of said molten polymer,

l is the length of each polymer channel, and

Q is the polymer flow rate in each polymer channel;

said molten polymer forming said melt blown fibers exhibiting an apparent melt viscosity of less than 45 poise, said molten polymer introduced into said elongated chamber being at a temperature of at least 40° F. lower than the temperature of said melt blown fibers.

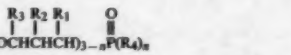
4,380,571

FIRE RETARDANT EPOXY RESINS CONTAINING 3-HYDROXYALKYLPHOSPHINE OXIDES

Edward R. Fretz, Jr., East Windsor, and Joseph Green, East Brunswick, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 264,256, May 18, 1981, Pat. No. 4,345,059.
This application Apr. 19, 1982, Ser. No. 369,786
Int. Cl.³ B32B 17/10
U.S. Cl. 428—415 2 Claims

1. A fire retardant laminate comprising adjacent layers of a substrate coated on both sides with a mixture of epoxy resin and a 3-hydroxypropylphosphine oxide having the formula:



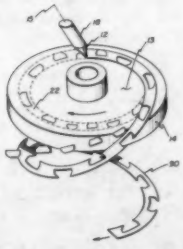
wherein R_1 may be the same or a different radical selected from the group consisting of hydrogen, phenyl, hydroxymethyl and alkyl radicals of 1–4 carbon atoms, R_2 may be the same or a different radical selected from the group consisting of hydrogen, hydroxymethyl, and alkyl radicals of 1–4 carbon atoms, R_3 may be the same or a different radical selected from the group consisting of hydrogen and methyl radicals, R_4 is an alkyl radical of 2–8 carbon atoms and n is either 1 or 2; and a hardener, said adjacent layers being bound together into each other by said epoxy resin mixture to form a unitary structure.

4,380,572

PATTERNED HELICAL METALLIC RIBBON FOR CONTINUOUS EDGE WINDING APPLICATIONS

Howard H. Liebermann, Schenectady; Peter G. Frischmann, Scotia, both of N.Y., and George M. Rosenberry, Jr., Hendersonville, Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 972,239, Dec. 22, 1978, Pat. No. 4,341,845.
This application May 21, 1981, Ser. No. 265,939
Int. Cl.³ B22D 11/00
U.S. Cl. 428—592 8 Claims



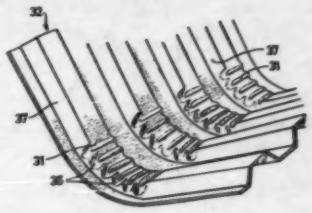
1. A continuous length of cast edge-wound patterned metallic ribbon having a permanent cast-in helical shape with a substantially glassy microstructure, a pair of substantially parallel opposed major surfaces, an inner peripheral edge, an outer peripheral edge, and a predetermined pattern of cut-outs.

4,380,573

METHOD AND DEVICE FOR BENDING SECTION-SHEET, PLATE, STRIP AND LIKE MATERIAL

Gustav Näslund, Älvsbyn, Sweden, assignor to Korstrüsk Mekaniska, G. Näslund, Älvsbyn, Sweden

Division of Ser. No. 807,651, Jun. 17, 1977, Pat. No. 4,220,031.
This application Jan. 30, 1980, Ser. No. 116,748
Int. Cl.³ B21D 13/00, 13/10
U.S. Cl. 428—595 7 Claims



1. A method of bending a section-sheet comprising alternating longitudinal ridges and valleys, the side portions of which valleys also constitute side portions of the ridges, perpendicularly to the longitudinal directions of the ridges and valleys, characterized in that the lower surface of the valley bottoms is impressed from below on its entire width along a straight line in parallel with the valley bottoms, which line extends perpendicularly relative to said longitudinal direction, that the impression is made in radial direction relative to a shaft in parallel with and located on the same side of the sheet as said line between holding-up members positioned in relatively small spaced relationship, which members prior to the beginning of the impressing operation are tightened only to the upper surface of the valley bottoms to permit the sides of the lateral portions of the valleys forming a part of the lower surface of the sheet to bulge outward when the impression is being made, and after such an impression the relative position between the holding-up members and the sheet is changed for carrying out a second impression in parallel with the first one, whereafter this operation is repeated until the desired bending angle has been obtained.

4. A sheet having a transverse contour comprising corrugations forming a series of mutually parallel ridges and valleys with common side walls, said sheet having a bend formed by at least one straight line of impressions extending transversely across said valleys upwardly into the valleys and adjacent portions of said side walls and at the ends of said impressions said side walls having indents extending outwardly away from the impressions.

4,380,574

HIGH-DAMPING COMPOSITE MATERIAL

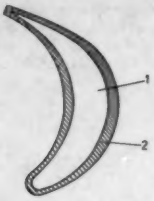
Gernot Gessinger, Birmenstorf, and Olivier Mercier, Ennetbaden, both of Switzerland, assignors to BBC Brown, Boveri & Company, Ltd., Baden, Switzerland

Division of Ser. No. 882,227, Feb. 28, 1978, abandoned. This application May 21, 1979, Ser. No. 40,532
Claims priority, application Switzerland, May 9, 1977, 5756/77
Int. Cl.³ B32B 15/01; C25D 5/26
U.S. Cl. 428—686 8 Claims

1. A procedure for manufacture of machine components which are highly stressed mechanically and thermally, comprising:

forming said machine components from a metal or metal alloy base material having poor damping properties which determines the strength and shape of said component; and

subsequently coating all the surfaces of the resulting component with a metal or metal alloy having high damping characteristics sufficient to improve the lifetime of said machine component.



4,380,575

METHOD FOR CONVERSION OF CHEMICAL ENERGY TO ELECTRIC ENERGY

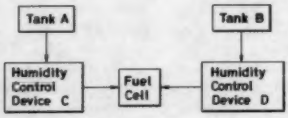
Osamu Nakamura, Ikeda; Isao Ogino, Minoo, and Teruo Kodama, Ikeda, all of Japan, assignors to Agency of Industrial Science and Technology and Ministry of International Trade and Industry, both of Tokyo, Japan

Filed Nov. 12, 1981, Ser. No. 320,429

Claims priority, application Japan, Nov. 14, 1980, 55/161149

Int. Cl.³ H01M *8/00*

U.S. Cl. 429—13 **1 Claim**



1. A method for the conversion of chemical energy into electric energy by the continuous electrochemical reaction of an anodic reactant held in contact with an anode and remaining in a gaseous state at room temperature with a cathodic reactant held in contact with a cathode and remaining in a gaseous state at room temperature through the medium of a heteropoly acid solid electrolyte, which method is characterized by incorporating a step of passing said anodic reactant and cathodic reactant through pools of a saturated aqueous solution of a selected salt each bordering on a closed empty space and retained within a fixed temperature range and releasing said anodic reactant and cathodic reactant into successive closed empty spaces thereby enabling said reactants to acquire fixed relative humidities prior to the contact thereof with the anode and cathode.

4,380,576

AIR CELL

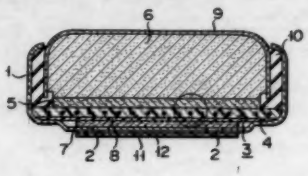
Kazumasa Yoshida, and Michio Watabe, both of Yokohama, Japan, assignors to Toshiba Battery Co., Ltd., Tokyo, Japan

Filed Dec. 31, 1981, Ser. No. 336,459

Int. Cl.³ H01M *4/00*

U.S. Cl. 429—27 **5 Claims**

1. An air cell comprising an air cathode, one surface of which is in contact with an electrolyte and the other surface of which is in contact with air; said air cathode having a current collecting grid, a carbon powder, a binder and a metal chelate, said current collecting grid being located at a center of said air cathode, and a concentration of the binder in an area of said air cathode which is in contact with the electrolyte beyond said current collecting grid being lower than a concentration of the binder in an area of said air cathode which is in contact with the air.



4,380,577

STAGGERED TEETH COVER

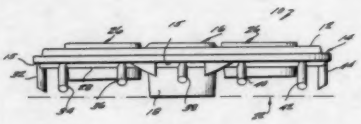
James S. Hardigg, Conway, Mass., assignor to Hardigg Industries, Inc., South Deerfield, Mass.

Continuation of Ser. No. 135,117, Mar. 28, 1980, abandoned.

This application Sep. 28, 1981, Ser. No. 306,538

Int. Cl.³ H01M *2/08*

U.S. Cl. 429—175 **23 Claims**



1. A cover for a thermoplastic battery jar having relatively thin side walls which have a tendency to bow inwardly, said cover being comprised of a thermoplastic plate member having a predetermined thickness, top and bottom surfaces and four edges, a plurality of means defining openings extending through said plate member, and guide means, positioned at predetermined locations solely around the periphery of said plate member and extending downwardly away from said bottom surface, for interacting with the interior of said thin side walls of said battery jar and for aligning the cover therewith, said guide means being spaced inwardly a predetermined distance from said edges, said guide means having a length that varies from a first predetermined length at the corners of said cover to a second shorter predetermined length adjacent the central portion of each edge.

4,380,578

ELECTROCHEMICAL CELL WITH GELLED ANODE

William S. Bahary, Pearl River, N.Y., assignor to Duracell Inc., Tarrytown, N.Y.

Filed Aug. 31, 1981, Ser. No. 297,664

Int. Cl.³ H01M *4/02, 6/04*

U.S. Cl. 429—206 **13 Claims**

1. A gelled anode for an electrochemical cell comprising a powdered anode active metal, an aqueous alkaline electrolyte and a gelling agent characterized in that said gelling agent is comprised of an anionic rigid ordered polysaccharide.

4,380,579

ELECTROSTATIC COPYING PROCESS AND APPARATUS

Shoji Matsumoto, 3-7, Koya-cho, Neyagawa-shi, Osaka-fu; Toshikazu Matsui, 1-23, 3-chome, Kamori-cho, Kishiwada-shi, Osaka-fu; Toshimitsu Ikeda, 6-5, 7-chome, Yoshida, Higashiosaka-shi, Osaka-fu; Nobuhiko Kozuka, 26-21, Showa-cho, Suita-shi, Osaka-fu; Hitoshi Nishihama, 58-2, Minamihoriike, Ogura-cho, Uji-shi, Kyoto-fu, and Tatsuo Aizawa, 6-34, Kuwazu-cho, Higashisumiyoshi-ku, Osaka, all of Japan

Division of Ser. No. 895,465, Apr. 11, 1978, Pat. No. 4,254,202. This application Oct. 26, 1979, Ser. No. 88,655

Claims priority, application Japan, Apr. 19, 1977, 52-44162

Int. Cl.³ G03G *13/00, 21/00*

U.S. Cl. 430—126 1 Claim

1. An electrostatic copying process which comprises

(1) the step of forming an electrostatic latent image on the surface of a photosensitive member having a photoconductive layer by (a) applying an electrostatic charge to the surface of the photosensitive member by energizing a corona discharge device disposed along the path of the photosensitive member and (b) projecting the image of an original onto the charged surface of the photosensitive member by an optical system including an exposure lamp for illuminating the original in an original image exposing area located along the moving path of the surface of the photosensitive member downstream of the corona discharge device, thereby to form an electrostatic latent image on the surface of the photosensitive member, and at the completion of the image forming step, deenergizing the corona discharge device,

(2) the step of developing the electrostatic latent image by applying a fine powdery developer to the electrostatic latent image formed on the surface of the photosensitive member by a developing device provided along the moving path of the surface of the photosensitive member and downstream of the image exposing area, thereby to form a toner image on the surface of the photosensitive member,

(3) the step of transferring the toner image formed on the surface of the photosensitive member to a receptor sheet in a transfer station provided downstream of the developing device along the moving path of the surface of the photosensitive member; and

beginning irradiation of the surface of the photosensitive member with light from a lamp taken from the group consisting of a separate lamp and said exposure lamp in an area downstream of the corona discharge device for charging and upstream of the developing device along the moving path of the surface of the photosensitive member only in response to the deenergizing of the corona discharge device for charging at the completion of the electrostatic latent image-forming step (1) and continuing the irradiation for a specified period of time at least substantially equal to the time required for that part of the photosensitive member which is situated in the charging zone to pass the original-image projecting zone during the moving of the photosensitive member.

4,380,580

HETEROGENOUS CHEMILUMINESCENT SPECIFIC BINDING ASSAY

Robert C. Boguslaski, Elkhart; Robert J. Carrico, Bremen, both of Ind., and James E. Christner, Ann Arbor, Mich., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 894,838, Apr. 10, 1978, which is a continuation of Ser. No. 667,982, Mar. 18, 1976, abandoned, which is a continuation-in-part of Ser. No. 572,008, Apr. 28, 1975, abandoned. This application Jun. 21, 1979, Ser. No. 50,681

Int. Cl.³ G01N *33/54, 33/58, 21/76*

U.S. Cl. 435—7 56 Claims

1. In a heterogeneous specific binding assay method for determining a ligand in a liquid medium, which method comprises the steps of:

(a) contacting said liquid medium with reagent means including a labeled conjugate comprising a specific binding substance coupled to a labeling substance, said reagent means and the ligand forming a binding reaction system producing a bound-phase and a free-phase of the labeled conjugate;

(b) separating said bound-phase and said free-phase; and

(c) determining said labeling substance in said bound-phase or said free-phase as a function of said ligand in said liquid medium,

the improvement wherein said labeling substance is a chemiluminescent reactant and wherein said chemiluminescent label is determined in said bound-phase or said free-phase by forming the chemiluminescent reaction therein and measuring the light produced.

4,380,581

ISTAMYCINS AND STREPTOMYCES CULTURE FOR THE PRODUCTION THEREOF

Hamao Umezawa; Yoshiro Okami, both of Tokyo, and Shinichi Kondo, Yokohama, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenky Kai, Tokyo, Japan

Division of Ser. No. 141,492, Apr. 18, 1980, Pat. No. 4,296,106. This application Feb. 5, 1981, Ser. No. 231,640

Int. Cl.³ C12P *19/48;* C12N *1/20;* C12R *1/465*

U.S. Cl. 435—80 10 Claims

1. The process for the production of the antibiotic, istamycin complex, which comprises cultivating a microorganism having the identifying characteristics of *Streptomyces tenjimariensis* SS-939, identified as FERM-P 4932 or ATCC 31603, under aerobic conditions in a culture medium containing assimilable sources of carbon and nitrogen until a substantial amount of istamycin is produced and accumulated in the culture medium.

4,380,582

PREPARATION OF DRY VARIOLA VIRUS

Michael D. Orlando, and Jean M. Riley, both of Frederick, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 9, 1965, Ser. No. 471,791

Int. Cl.³ C12N *5/00*

U.S. Cl. 435—239 1 Claim

1. In a process for the preparation of a variola virus which comprises the steps of: chorioallantoic inoculation of the embryos of fertile chicken eggs, incubating the eggs for a period of time sufficient to cultivate the virus, separating the embryos from the rest of the eggs, stabilizing the embryos, homogenizing, differential centrifuging the resultant slurry, freezing the slurry into pellets and drying the pellets under a vacuum; the improvement wherein the stabilizing comprises the addition of: 2.5% lactose, 2.5% raffinose, 1.5% lysine, 1.5% sodium glutamate, 1.5% dextrin, 0.5% isoniazid, and 0.5% thiourea, per volume of embryos.

4,380,583

METHOD OF PREPARING SEEDING MATERIAL FOR PRODUCTION OF CITRIC ACID

Roman Y. Karklin, ulitsa Veidenbauma, 45, kv. 13; Alma A. Rumba, ulitsa Putses, 12, kv. 3, and Via K. Azanda, ulitsa Lenina, 237, kv. 1, all of Riga, U.S.S.R.

Filed Apr. 8, 1981, Ser. No. 252,040

Claims priority, application U.S.S.R., Apr. 19, 1980, 2932440

Int. Cl.³ C12N *3/00*

U.S. Cl. 435—242 3 Claims

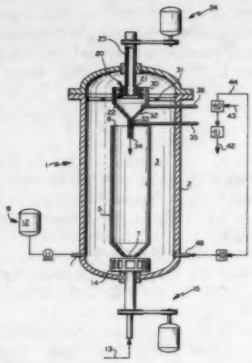
1. A method of preparing a seeding material for the production of citric acid comprising cultivating the fungus *Aspergillus niger* R-3 strain TsMPMF 132 on a nutrient medium containing a carbon source selected from the group consisting of malt extract and beer must, a nitrogen source, and at least one mineral salt to form spores and separating said spores in an amount in excess of 1.3 g/dm from the nutrient medium.

4,380,584

FERMENTATION APPARATUS

Donald O. Hitzman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 139,371, Apr. 11, 1980, Pat. No. 4,340,677.
This application Apr. 30, 1982, Ser. No. 373,774
Int. Cl.³ C12M 1/08, 1/06, 1/04, 1/02
U.S. Cl. 435—313 11 Claims



1. In a fermentation apparatus comprising
(a) a housing
(b) at least one feed conduit for the introduction of materials into said housing,
(c) at least one product conduit for the removal of product from said housing,
(d) a foam breaker in the upper portion of said housing
(e) a gas outlet operatively connected to said foam breaker for allowing the removal of gas from said fermenter,
the improvement comprising
(f) a fluid collector operatively associated with respect to said foam breaker and at a small distance from said foam breaker, allowing the collection of at least a portion of the fluid leaving said foam breaker and
(g) conduit means operatively associated with said collecting unit allowing the withdrawal of at least a portion of the fluid so collected from said housing.

4,380,585

STABILIZATION OF BENZIDINE-TYPE INDICATORS WITH VARIOUS ENHANCERS

Thomas A. Magers, South Bend, and David L. Tabb, Elkhart, both of Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 93,431, Nov. 13, 1979, Pat. No. 4,290,773.
This application Jul. 23, 1981, Ser. No. 285,930
Int. Cl.³ G01N 33/52
U.S. Cl. 436—66 2 Claims

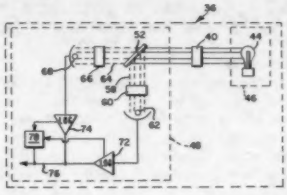
1. In a composition for detecting the presence of a constituent in a test sample, the composition comprising a benzidine-type indicator, the improvement wherein said composition additionally comprises, as an enhancer compound, a normal, branched or cyclic hexanol.

4,380,586

METHOD AND APPARATUS FOR PHOTOMETRICALLY MONITORING LOW LEVEL CONCENTRATION OF HYDROGEN SULFIDE IN ALKANOL AMINE

Robert S. Saltzman, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 211,582, Dec. 1, 1980, abandoned. This application Oct. 13, 1981, Ser. No. 310,451
Int. Cl.³ G01N 21/75
U.S. Cl. 436—121 26 Claims



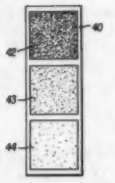
1. A method for photometrically analyzing the hydrogen sulfide concentration in a stream containing at least a first predetermined concentration of bonded hydrogen sulfide-amines and ultraviolet radiation-absorbing impurities comprising the sequential steps of:
(a) removing the hydrogen sulfide from a first, reference, sample of the stream until a second predetermined concentration remains therein;
(b) photometrically analyzing the first, reference, sample to generate a reference signal representative of the ultraviolet radiation-absorbing characteristics of the remaining hydrogen sulfide and of the impurities in the first, reference, sample; and
(c) photometrically analyzing a second sample of the stream in a manner which takes into account the reference signal to generate a signal representative of the concentration of hydrogen sulfide therein.

4,380,587

FILM BADGE FOR DETERMINING CARBONYL COMPOUNDS

Martin Koocher, Lexington, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Filed Aug. 20, 1981, Ser. No. 294,584
Int. Cl.³ G01N 21/75, 31/00
U.S. Cl. 436—128 10 Claims



7. A method for determining a fluidic-contained carbonyl compound comprising
a. contacting a chemically inert substrate having adhered to the surface thereof a substantially monodisperse system of particles of a derivatizing agent for the carbonyl compound with the fluidic-contained carbonyl compound to form nucleating sites;
b. treating said nucleating sites with a metastable supersaturated solution in which said nucleating sites can grow;
c. growing said nucleating sites to form an optically measurable film of crystals; and

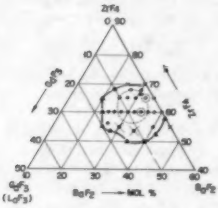
d. optically measuring said film of crystals to determine the concentration of fluidic contained carbonyl compound.

4,380,588

GLASS FOR INFRARED RAY-TRANSMITTING OPTICAL FIBERS AND OPTICAL FIBERS FORMED FROM SAID GLASS

Seiko Mitachi; Shuichi Shibata; Terutoshi Kanamori; Toyotaka Manabe, all of Mito, and Mitsuho Yasu, Katsuta, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Division of Ser. No. 226,716, Jan. 21, 1981, Pat. No. 4,343,638. This application Jan. 18, 1982, Ser. No. 340,057
Claims priority, application Japan, Feb. 4, 1980, 55-11531
Int. Cl.³ C03C 3/18, 3/30
U.S. Cl. 501—37 8 Claims



1. An infrared ray-transmitting glass composition for optical fibers consisting essentially of 28 mol% to 38 mol% of BaF_2, 2 mol% to 7 mol% of GdF_3 and 58 mol% to 69 mol% of ZrF_4.

4,380,589

NOVEL FISCHER-TROPSCH CATALYSTS

Craig B. Murchison, Midland, Mich., and Dewey A. Murdick, Tulsa, Okla., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 24, 1981, Ser. No. 334,117
Int. Cl.³ C07C 1/04
U.S. Cl. 518—714 13 Claims

1. A Fischer-Tropsch process for producing hydrocarbons with improved selectivity to C_2–C_4 olefins comprising contacting hydrogen and carbon monoxide in the presence of a catalyst comprising:

(1) molybdenum in free or combined form;

(2) a promoter comprising an alkali or alkaline earth metal in a free or combined form; and

(3) a binder comprising an iron-containing calcium aluminate cement.

4,380,590

EMULSION COPOLYMER CATION EXCHANGE RESINS

Berni P. Chong, North Wales, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Sep. 19, 1978, Ser. No. 943,889
Int. Cl.³ C08F 39/20, 6/22, 8/36
U.S. Cl. 521—33 16 Claims

1. A liquid cation exchange material comprising an emulsion of submicroscopic, approximately spherical beads of previously isolated, crosslinked emulsion copolymer having diameters within the range from about 0.01 to about 1.5 micrometers, and bearing from about 0.7 to about 1.5 cation exchange functional groups per monomer unit, the cation exchange functional groups being selected from the group consisting of

strongly acidic functional groups and the free acid form of weakly acidic functional groups.

4,380,591

NOVEL AMINO CATALYST MIXTURE FOR STABILIZATION OF POLYURETHANE FOAM

Feyyaz O. Baskent, Mahopac, and Michael R. Sandner, Chappaqua, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Feb. 3, 1982, Ser. No. 345,393
Int. Cl.³ C08G 18/14, 18/42, 18/18, 18/20
U.S. Cl. 521—115 13 Claims

1. A method for producing a cellular urethane polymer which comprises reacting (a) an organic polyisocyanate and (b) a polyester polyol containing at least two active hydrogen atoms, in the presence of a blowing agent and an amino catalyst mixture and foaming the product, wherein the amino catalyst mixture comprises from about 10 to 95 percent by weight of 2-diisopropylamino ethanol and from 5 to 90 weight percent of an amine or a mixture of amines selected from the group consisting of 2-(2-dimethylaminoethoxy) ethanol; bis-(2-dimethylamino) ethyl ether; and 1,4-diazo-bicyclo[2.2.2]octane.

4,380,592

PROCESS FOR THE PRODUCTION OF POLYHYDROXY LIGNIN-CELLULOSE SILICATE POLYMER

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Division of Ser. No. 372,298, Apr. 27, 1982, which is a continuation-in-part of Ser. No. 306,184, Sep. 28, 1981, Pat. No. 4,367,326, which is a continuation-in-part of Ser. No. 257,126, Apr. 24, 1981, Pat. No. 4,313,857, which is a continuation-in-part of Ser. No. 203,730, Nov. 3, 1980, Pat. No. 4,281,110, which is a continuation-in-part of Ser. No. 112,290, Jan. 15, 1980, Pat. No. 4,243,757, which is a continuation-in-part of Ser. No. 29,282, Apr. 12, 1979, Pat. No. 4,220,757. This application Sep. 1, 1982, Ser. No. 413,975
Int. Cl.³ C08H 5/00
U.S. Cl. 521—151 24 Claims

1. The process for the production of foamed polyurethane silicate products by the following steps:

(a) mixing and reacting the following components, thereby producing a polyhydroxy lignin-cellulose polymer;

(i) a broken-down alkali metal plant silicate polymer produced by heating a mixture of 3 parts by weight of a cellulose-containing plant and 1 to 2 parts by weight of an oxidated silicon compound with 3 to 5 parts by weight of a melted alkali metal hydroxide to between 150° C. and 220° C. while agitating for 5 to 60 minutes; in an amount of 100 parts by weight;

(ii) an epoxide compound, in an amount of 1 to 3 parts by weight;

(iii) a Lewis acid, in an amount wherein the pH of the mixture of components (i), (ii) and (iii) is 5 to 6:

(b) mixing and reacting 100 parts by weight of the polyhydroxy lignin-cellulose silicate polymer as produced in step (a), 1 to 600 parts by weight of a compound containing at least two isocyanate groups up to 50% by weight of an inert blowing agent, percentage based on the weight of the reaction mixture.

4,380,593

INTUMESCENT COMPOSITIONS

Wulf von Bonin, Leverkusen, and Gottfried Zaby, Dormagen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 24, 1982, Ser. No. 351,687

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1981, 3109352

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—163 9 Claims

1. Intumescent compositions obtained by reacting

(a) polyisocyanates,

(b) phosphorous-containing condensation products having at least two hydroxyl groups, which are obtained by condensing primary or secondary, aliphatic, cycloaliphatic, aromatic, araliphatic or heterocyclic monoamines and/or polyamines optionally containing OH-groups, carbonyl compounds and dialkyl phosphites,

(c) polyethers of average functionality greater than two and having average OH-numbers of from 150 to 500 which have been obtained by the addition of alkylene oxides, of which from 50 to 100% by weight consist of ethylene oxide, with low molecular weight starters,

(d) cyanuric acid and/or cyanuric acid derivatives, and

(e) optionally, water and/or other organic compounds containing isocyanate-reactive hydrogen atoms.

4,380,594

FILAMENTS AND FIBERS HAVING DISCONTINUOUS CAVITIES

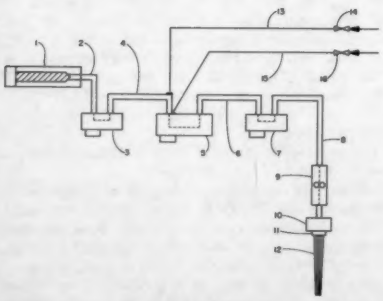
Erhard Siggel, Lutzelbach; Gerhard Wick, Obernburg; Heinz Linhart, Erlenbach, and Erich Kessler, Hochst, all of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Continuation of Ser. No. 952,190, Oct. 16, 1978, abandoned, which is a division of Ser. No. 738,985, Nov. 4, 1976, Pat. No. 4,164,603. This application Oct. 14, 1980, Ser. No. 196,336

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1975, 2550080

Int. Cl.³ C08G *63/00*

U.S. Cl. 521—182 5 Claims



1. A filament or fiber of thermoplastic, synthetic fiber-forming polymer having a plurality of adjacent, separate, discontinuous cavities of substantially uniform size and containing from 0.1% to 1% by weight of a disubstituted polysiloxane finely distributed in the polymer, and a cavity content of 5 to 50 vol. %, based on the total volume of the filament.

4,380,595

ENCAPSULATING SEALANT COMPOSITIONS FOR FRIABLE INSULATION MATERIALS

John Arpin, Ocean, N.J., assignor to Arpin Products, Inc., South Belmar, N.J.

Filed Oct. 14, 1980, Ser. No. 196,571

The portion of the term of this patent subsequent to Aug. 31, 1999, has been disclaimed.

Int. Cl.³ C08K *3/34*

U.S. Cl. 524—5 3 Claims

1. A penetrating sealant composition useful for encapsulating a friable material comprising a blend of:

Part I an aqueous silicate solution component comprising:

(a) 20 to 40 weight percent of an aqueous alkali metal silicate selected from potassium silicate or a mixture of potassium silicate and sodium silicate;

(b) 0.01 to 10 weight percent of a cationic or nonionic surfactant;

(c) 60 to 80 weight percent water; and

Part II an acrylic polymer dispersion component comprising:

(a) 45 to 65 weight percent of an acrylic polymer latex having a solids content of 40 to 65 weight percent, said acrylic polymer selected from the group consisting of homopolymers and copolymers of lower alkyl esters of acrylic acid or lower alkyl esters of an alpha-lower alkyl acid or mixtures thereof;

(b) 0.01 to 10 weight percent of a reagent that reacts with said alkali silicate; said reagent being selected from the group consisting of the borate, halide, nitrate and phosphate salts of aluminum, antimony, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, lead, magnesium, mercury, silver and zinc, and

(c) 35 to 55 weight percent water, wherein the ratio of Part I to Part II provides a blended composition having a solids content between 20 and 65 weight percent.

4,380,596

PRIMER OR SOLVENT RESISTANT PROTECTIVE COATING

George R. Watchko, Reading, Mass., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 4, 1981, Ser. No. 327,441

Int. Cl.³ C08L *75/04*

U.S. Cl. 524—86 8 Claims

1. An aqueous composition which comprises:

(a) an aqueous colloidal dispersion of an aliphatic urethane derived from the reaction of a diisocyanate of the formula OCN—R'NCO and water, wherein R is a divalent organic radical;

(b) an anionic surfactant; and

(c) a carbon containing pigment.

4,380,597

THERMOPLASTIC COMPOSITIONS BASED ON VINYL CHLORIDE POLYMERS STABILIZED WITH POLYHYDROXYL COMPOUNDS

Werner Erwied, Langenfeld, and Bernd Wegemund, Haan, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Oct. 21, 1981, Ser. No. 313,281

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1980, 3041887

Int. Cl.³ C08K *5/05, 5/09, 5/13;* C08L *27/06*

U.S. Cl. 524—109 26 Claims

1. A stabilized thermoplastic composition comprised of

polyvinyl chloride or mixed polymers containing mainly vinyl chloride units and a stabilizer additive composition of:

(1) heat stabilizers selected from the group consisting of metallic soaps, metallic phenolates and naphthenates and organotin compounds, and

(2) other conventional additives employed in thermoplastic compositions,

wherein said heat stabilizers include from 0.02 to 5 parts by weight, per 100 parts by weight of polymer, of at least one aliphatic compound selected from the group consisting of gluconic acid, glucuronic acid, ketogluconic acid, ascorbic acid, alkali metal salts of said acids, alkaline earth metal salts of said acids, and mixtures thereof.

4,380,598

FLAME RETARDANT POLYARYLATE COMPOSITIONS

Lloyd M. Robeson, Whitehouse Station, and Markus Matzner, Edison, both of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Feb. 12, 1981, Ser. No. 233,693

Int. Cl.³ C08K *5/42*

U.S. Cl. 524—163 **55 Claims**

1. A flame retardant molding composition comprising a blend of:

(a) a polyarylate derived from a dihydric phenol and an aromatic dicarboxylic acid, and

(b) a flame retarding amount of an alkali or alkaline earth metal salt of an aromatic sulfonic acid.

4,380,599

ORGANOTIN POLYMERS METHOD OF MAKING THEM AND PAINTS CONTAINING THEM

David H. Tooke-Kirby, Hornchurch; Richard E. Perry, Billericay, and Kenneth H. Arbuckle, Chigwell, all of England, assignors to Berger, Jenson and Nicholson Ltd., London, England

Filed Sep. 22, 1981, Ser. No. 304,811

Claims priority, application United Kingdom, Feb. 6, 1981, 8103674

Int. Cl.³ C08C *19/00*

U.S. Cl. 525—370 **10 Claims**

1. An organotin polymer suitable for use in marine anti-fouling paints, derived from a hydroxyl-containing polymer having a hydroxyl value of from 50 to 400, containing pendent groups having the following general formula:

$$-O.CO.R^1CO.OSnR_3$$

where R is C_1 to C_{10} alkyl, aryl, aralkyl or alkaryl and R^1 is a saturated or unsaturated aliphatic or aromatic C_2 to C_{10} group.

4,380,600

AQUEOUS DISPERSION OF WATER-SOLUBLE POLYMER COMPOSITION

Yoshikazu Hosoda; Shigeaobu Ishihara, and Shoichi Kobayashi, all of Yokohama, Japan, assignors to Showa Denko K.K., Tokyo, Japan

Continuation of Ser. No. 49,054, Jun. 15, 1979, abandoned. This application May 15, 1981, Ser. No. 263,921

Claims priority, application Japan, Jun. 19, 1978, 53-73232

Int. Cl.³ C08F *261/04*

U.S. Cl. 524—458 **17 Claims**

1. A process for producing an aqueous dispersion, having good stability and fluidity, of water-soluble polymers, which comprises polymerizing or copolymerizing (a) the monomer components of a composition containing at least one water-soluble ethylenically unsaturated monomer, all of said monomer components in said composition being capable of being polymerized or copolymerized with each other to form only a water-soluble polymer or copolymer, said polymerization being carried out in an aqueous solution of (b) at least one water-soluble polymer which is different from the polymer derived from said monomer components (a), said aqueous solution containing 3 to 150 parts by weight of said water-soluble polymer (b) per 100 parts by weight of water, the amount of said monomer components (a) being 10 to 150 parts by weight per 100 parts by weight of said water, the weight ratio of (a):(b) being within the range of from 1:5 to 5:1, said aqueous dispersion of water-soluble polymers being (i) a dispersion in water of a loose water-containing complex composed of said polymer or copolymer derived from said monomer components (a) and said water-soluble polymer (b), or (ii) a dispersion of said polymer or copolymer derived from said monomer components (a) in said aqueous solution of said water-soluble polymer (b).

4,380,601

THERMOSETTING CATONIC ACRYLIC LATICES AND THEIR USE IN COATING COMPOSITIONS

David A. Welsh, Monroeville; Rostyslaw Dowbenko, Gibsonia; Surya K. Das, Pittsburgh; Charles M. Kania, Tarentum, and Roger M. Christenson, Gibsonia, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 25, 1981, Ser. No. 305,585

Int. Cl.³ C08L *75/12, 33/12*

U.S. Cl. 524—555 **5 Claims**

1. A stable thermosetting cationic acrylic latex composition, comprising a blocked isocyanate curing agent and a cationic acrylic latex; the cationic acrylic latex being prepared by a process which comprises copolymerizing ethylenically unsaturated monomers, at least one of which contains an active hydrogen group, in an acidic medium in the presence of water, a polymerization initiator and a cationic surfactant which has a gegen-ion derived from an acid selected from the group consisting of phosphoric acid, phosphorous acid, hypophosphorous and alkyl or aryl hydrogen phosphate.

4,380,602

WATER-SOLUBLE THERMOSETTABLE RESINOUS COMPOSITIONS CONTAINING DICYANDIAMIDE-FORMALDEHYDE CONDENSATES MODIFIED WITH EPIHALOHYDRIN AND PROCESS FOR PREPARING THE SAME

David H. Dumas, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Dec. 8, 1981, Ser. No. 328,751

Int. Cl.³ C08L *61/22*

U.S. Cl. 524—598 **8 Claims**

1. A process for preparing improved water-soluble thermosettable resinous compositions containing dicyandiamideformaldehyde condensates which process comprises (1) forming a precondensate solution by refluxing for about 1 to about 4 hours an aqueous mixture of (a) a base reaction product of 1 mole of dicyandiamide, 0.75 mole to 1.5 moles of formaldehyde and an acid salt of a water-soluble polyaminopolyamide in an amount sufficient to provide from about 0.125 to about 0.5 equivalent of basic nitrogen and (b) an ammonium salt in an amount such that there will be from 0.7 equivalent to about 1.2 equivalents of basic nitrogen derived from the salt of the polyaminopolyamide and the ammonium salt in the aqueous medium, (2) adding to the precondensate solution from 0.30 to 0.45 mole of epihalohydrin per equivalent of basic nitrogen derived from the salt of the polyaminopolyamide and the ammonium salt, and heating the aqueous mixture at about 50° to about 80° C. for about 15 to about 45 minutes until a solution of modified precondensate is formed, (3) adding from about 1.25 to about 3.75 moles of formaldehyde to the aqueous solution of modified precondensate and (4) heating the resulting mixture at about 60° to about 100° C. until the viscosity of an aqueous soluuion of the resulting reaction product at a solids content of 50% is from about U to Z on the Gardner-Holdt scale.

4,380,603

EPIHALOHYDRIN MODIFIED DICYANDIAMIDE-FORMALDEHYDE CONDENSATES AND PROCESS FOR PREPARING THE SAME

Ralph A. Bankert, New Castle, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Dec. 8, 1981, Ser. No. 328,754
Int. Cl.³ C08L 61/22
U.S. Cl. 524—598 13 Claims

1. A process for preparing improved water-soluble thermosettable resinous compositions containing dicyandiamide-formaldehyde condensates which process comprises (1) forming a precondensate solution by refluxing for about 1 to about 4 hours an aqueous mixture of (a) a base reaction product of 1 mole of dicyandiamide, 0.75 mole to 1.5 moles of formaldehyde and an acid salt of a water-soluble polyaminopolyamide in an ammount sufficient to provide from about 0.125 to about 0.5 equivalent of basic nitrogen and (b) an ammonium salt in an amount such that there will be from 0.7 equivalent to about 1.2 equivalents of basic nitrogen derived from the salt of the polyaminopolyamide and the ammonium salt in the aqueous medium, (2) adding to the precondensate solution from 0.30 to 0.45 mole of epihalohydrin per equivalent of basic nitrogen derived from the salt of the polyaminopolyamide and the ammonium salt, and heating the aqueous mixture at about 50° to about 80° C. for about 15 to about 45 minutes until a solution of modified precondensate is formed, (3) adding from about 1.25 to about 3.75 moles of formaldehyde to the aqueous solution of modified precondensate and heating the resulting mixture at about 60° to about 100° C. until the viscosity of an aqueous solution of the resulting reaction product at a solids content of 50% is from about U to Z on the Gardner-Holdt scale, (4) diluting the solution of step (3), if necessary, to a solids content less than 35% and (5) adding to the solution of step (4) from 0.03 to 0.75 mole, per mole of formaldehyde added in step (3), of epihalohydrin or a nitrogen-containing compound of the formula NHRR′ where R and R′ are independently hydrogen, alkyl or hydroxyalkyl and, where R is hydrogen, R′ also is aminoalkyl or an amido group, and heating the resulting mixture at about 45° to about 70° C. for about 0.5 hour to about 2 hours.

4,380,604

RADIATION-HARDENABLE ACRYLIC ACID ESTERS CONTAINING URETHANE GROUPS AND THEIR USE

Karl-Friedrich Neuhaus; Hermann Perrey; Karl Fuhr; Hans-Joachim Freier, and Otto Bendszus, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 30, 1981, Ser. No. 325,813
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1980, 3045788
Int. Cl.³ C08G 18/00, 18/32, 18/62
U.S. Cl. 524—873 10 Claims

1. A radiation-hardenable binder comprising a reaction product ester containing hydroxyl groups and hydroxyalkyl acrylates, which comprises:

(A) 1 NCO gram equivalent of a polyisocyanate containing from 2 to 3 isocyanate groups per molecule;

(B) from 0.4 to 1.2 OH gram equivalents of an ethylenically-unsaturated partial ester having an OH number of from 80 to 150 of an alkoxylated trimethylol propane having a degree of alkoxylation of 3 to 4.5 and acrylic acid or methacrylic acid or a mixture thereof; and

(C) from 0 to 0.6 OH gram equivalents of a hydroxy alkyl acrylate or hydroxy alkyl methacrylate or a mixture thereof containing from 2 to 6 carbon atoms in the alkyl group,

wherein the sum total of the OH-gram equivalents of B and C is between 1 and 1.2.

4,380,605

ROOM TEMPERATURE CROSSLINKING UNSATURATED POLYESTER RESINS

Ronald B. Gallagher, Lancaster, and Michael F. Novits, Buffalo, both of N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Sep. 21, 1981, Ser. No. 304,136
Int. Cl.³ C08G 63/76
U.S. Cl. 525—14 10 Claims

1. A process of crosslinking an unsaturated polyester resin comprising admixing to said unsaturated resin

(a) an initiating amount of at least one peroxyester,

(b) mercaptobenzothiazole, and

(c) an inorganic metal salt wherein the metal is selected from the group consisting of iron, copper and a mixture of the metal salt, and crosslinking the admixture at room temperature.

4,380,606

ACRYLIC COPOLYMER RUBBER/POLYVINYLCHLORIDE

Aubert Y. Coran, and Raman Patel, both of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Apr. 29, 1982, Ser. No. 373,316
Int. Cl.³ C08L 33/02, 23/08, 27/06
U.S. Cl. 525—196 13 Claims

1. A thermoplastic composition comprising a blend of about 20 to 98 parts by weight of at least 10% partially neutralized acid containing acrylic-olefin copolymer rubber, and about 80 to 2 parts by weight of polyvinylchloride (PVC) per 100 parts by weight of said rubber and PVC combined.

4,380,607

RUBBER COMPOSITION HAVING HIGH MODULUS OF ELASTICITY AND PROCESS FOR PREPARING SAME

Hiroharu Ikeda, Machida; Kohei Goto, Fukuoka, and Yasuyuki Shimozato, Yokohama, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Apr. 23, 1981, Ser. No. 256,921
Claims priority, application Japan, Apr. 28, 1980, 55/55450; May 27, 1980, 55/69570
Int. Cl.³ C08L 9/00
U.S. Cl. 525—232 10 Claims

1. A rubber composition having a high modulus of elasticity consisting essentially of a dispersion in which fine particles of a high-melting isotactic poly-α-olefin having a melting point of at least 150° C. are uniformly dispersed in a rubber matrix, said fine particles having an average particle size of not more than 200μ.

4,380,608

PROCESS FOR PRODUCING PROPYLENE-ETHYLENE BLOCK COPOLYMER

Masayoshi Hasuo, Yokohama; Yoshinori Suga, Machida; Hisashi Kitada, Yokohama; Yasuo Maruyama, Yokohama, and Junichi Gotoh, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

Filed Feb. 10, 1982, Ser. No. 347,425
Claims priority, application Japan, Mar. 6, 1981, 56-32216; Apr. 21, 1981, 56-60226
Int. Cl.³ C08F 297/08
U.S. Cl. 525—247 7 Claims

1. In a continuous process for producing a propylene-ethylene block copolymer in the presence of a catalyst comprising as main components, a solid titanium-containing catalyst component and an organoaluminum compound having the formula

$$AlR_m^1Cl_{3-m}$$

(R^1 represents a C_{1-20} hydrocarbon moiety; and m is $3 \geqq m > 1.5$) by producing a homopolymer of propylene or a propylene-ethylene copolymer by polymerizing propylene or

both propylene and ethylene at a vapor phase propylene concentration of 90 mol % or higher based on the sum of propylene and ethylene in a first step and producing a propylene-ethylene block copolymer by copolymerizing propylene and ethylene at a vapor phase propylene concentration of less than 90 mol % based on the sum of propylene and ethylene in the presence of the polymer resulting from the first step and the catalyst in a second step, an improvement characterized by newly adding an aluminum compound having the formula

$$AlR_n^2X_{3-n}$$

(R^2 represents a C_{1-20} hydrocarbon moiety; X represents a halogen atom and n is $1.5 \geqq n \geqq 0$) to the components for the copolymerization in the second step.

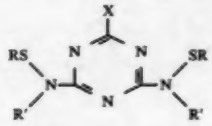
4,380,609

PREVULCANIZATION INHIBITORS OF THIO-TRIAZINE-AMINES FOR RUBBER

Eiichi Morita, Copley, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 19, 1981, Ser. No. 312,572
Int. Cl.³ C08C 19/22, 19/20
U.S. Cl. 525—348 **10 Claims**

1. A vulcanizable rubber composition comprising sulfur-vulcanizable diene rubber, sulfur-vulcanizing agent, organic vulcanization accelerating agent and, in an amount effective to inhibit premature vulcanization, a compound of the formula



in which R′ is hydrogen or —SR, X is hydrogen, chloro, alkoxy of 1–5 carbon atoms, alkylthio of 1–5 carbon atoms, NHR″, $N(R'')_2$ where R″ is R or allyl, NHSR, $N(SR)_2$ or R, and R is alkyl of 1–12 carbon atoms or alkyl substituted by cyano, acetoxy, or alkoxycarbonyl of 2–5 carbon atoms, aralkyl of 7–10 carbon atoms, cycloalkyl of 5–8 carbon atoms, phenyl, or phenyl substituted by chloro, alkyl of 1–5 carbon atoms, of alkoxy of 1–5 carbon atoms.

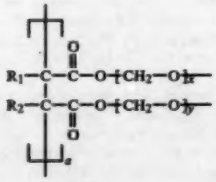
4,380,610

POLYACETAL COMB POLYMERS

Jeff T. Fenton, and Mark P. Mack, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Dec. 21, 1981, Ser. No. 332,416
Int. Cl.³ C08G 6/00; C08L 61/02
U.S. Cl. 525—400 **14 Claims**

1. Comb polymers having a carbon-to-carbon backbone linkage and pendant polymer chains wherein the polymer contains at least one structure selected from the group consisting of



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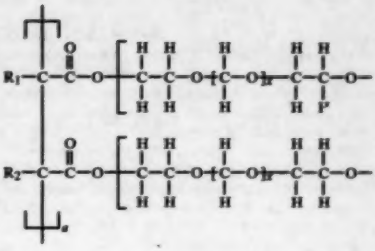
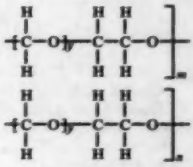
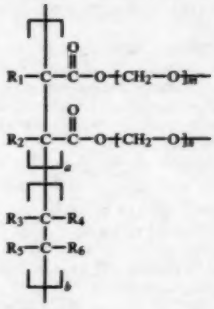
(b)



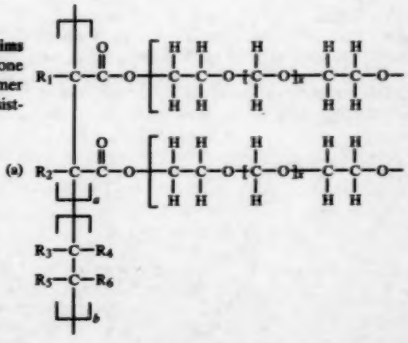


(c)



(d)

(a)



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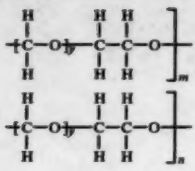


wherein R_1, R_2, R_3, R_4, R_5 and R_6 are, independently, hydrogen, cycloalkyl groups containing from 6 to 24 carbon atoms, alkyl groups containing from 1 to 20 carbon atoms, substituted alkyl groups containing from 1 to 30 carbon atoms, aryl groups containing from 6 to 20 carbon atoms or halogen, and wherein $x+7>100$, a and b are >25, $m>1$ and $n>1$.

3. A method for preparing polymers having a carbon-to-carbon backbone and having polymeric pendant chains attached thereto, comprising copolymerizing trioxane and at least one material selected from the group consisting of polymeric acid anhydrides, copolymers of olefins and anhydrides, or mixtures of these, wherein the copolymerization is carried out in the presence of an inorganic fluoride catalyst at temperatures of from about 0° C. to about 200° C.

4,380,611

ETHERIFIED METHYLOL POLYAMIDE CROSSLINKING AGENT, PROCESS FOR PRODUCING THE SAME AND RESINS CROSSLINKED THEREWITH

Howard J. Wright, Kansas City, Mo., and Joseph H. Scherrer, Shawnee Mission, Kans., assignors to Cook Paint and Varnish Company, Kansas City, Mo.

Filed Oct. 27, 1981, Ser. No. 315,439
Int. Cl.³ C08F 8/00; C08G 8/32, 12/40
U.S. Cl. 525—418 10 Claims

1. A cross-linking agent comprising a reaction product produced by (1) reacting a diester of a di- or poly-carboxylic acid with a molar excess of ammonium hydroxide to form a di- or polyamide, (2) methylolating said di- or polyamide and (3) etherifying the resulting methylolated di- or polyamide with an alkanol.

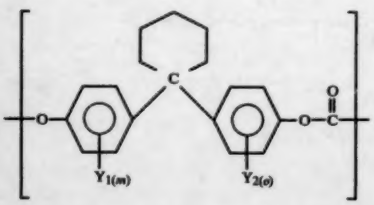
4,380,612

HIGH HEAT DISTORTION RESISTANT SEGMENT ESTER POLYCARBONATES

Victor Mark, Evansville, Ind.; Frederick F. Holub, Schenectady, N.Y., and Charles V. Hedges, Mt. Vernon, Ind., assignors to General Electric, Mt. Vernon, Ind.

Filed Dec. 21, 1981, Ser. No. 332,863
Int. Cl.³ C08G 63/64
U.S. Cl. 525—439 16 Claims

1. A high molecular weight segment-ester polycarbonate composition comprising aromatic carbonate units and aromatic diester units, said units derived from cyclic bisphenols and said units having the general formulae I and II respectively, the molar ratio of said aromatic carbonate units to aromatic diester units being from about 1:9 to about 9:1, and mixtures thereof:



I

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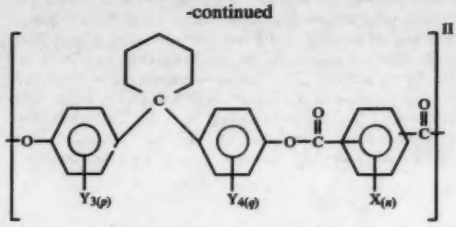


II

wherein X is independently selected from the group consisting of hydrogen, halogen and alkyl radical; Y, Y_2, Y_3 and Y_4 are the same or different and is an alkyl radical; m, o, p and q are the same or different and is 0, 1 or 2; n is an integer from 1 to 4; r is an integer from 2 to about 20.

4,380,613

GASKETING AND SEALING COMPOSITION

Larry A. Nativi, Rocky Hill, Conn., assignor to Loctite Corporation, Newington, Conn.

Filed Jul. 2, 1981, Ser. No. 279,905
Int. Cl.³ C08L 75/06
U.S. Cl. 525—440 9 Claims

1. An adhesive composition, especially useful for gasketing, comprising

(i) at least one polyester-urethane-methacrylate compound comprising the reaction product of

(a) toluene diisocyanate; and

(b) the reaction product of a diol adipate having 3 to 6 carbons, with neopentyl glycol, said reactants (a) and (b) to be reacted in the molor ratio of about 1.7 to 1.9 of (a) to about 1.0 of (b), and

(ii) a free-radical catalyst system.

4,380,614

SUSPENSION POLYMERIZATION OF HALOETHYLENE COMPOUND

Kunizoh Kidoh, and Hideki Wakamori, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 6, 1981, Ser. No. 222,924
Claims priority, application Japan, Mar. 10, 1980, 55/29950
Int. Cl.³ C08F 2/20, 114/06
U.S. Cl. 526—62 4 Claims

1. In a suspension polymerization of a haloethylene compound or a mixture of a haloethylene compound and a comonomer thereof in a aqueous medium containing a suspending agent and an oil soluble catalyst in a reactor, an improvement characterized by coating a water soluble or organic solvent soluble lignin derivative on an inner surface of said reactor or a surface of equipment contained within said reactor or by incorporating said lignin derivative in said aqueous medium at a concentration of 1 to 100 ppm based on said haloethylene compound.

4,380,615

DIAMINE RECOVERY PROCESS

Robert D. Sauerbrunn, Seaford, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 5, 1981, Ser. No. 240,914
Int. Cl.³ C08G 69/26
U.S. Cl. 526—65 8 Claims

1. An improved process for recovering unreacted diamine vapor in the form of a diamine dicarboxylic acid salt from water vapor continuously being separated from a reaction zone in which an aqueous solution of a polyamide-forming salt prepared from at least one diamine and at least one dicarboxylic acid is being heated and partially reacted to form water

vapor containing a vapor of said diamine and a polyamide prepolymer, said process consisting essentially of one in which a portion of the water vapor is continuously separated from the reaction zone through a rectifying zone having an upper portion and a lower portion and in which rectifying zone the water vapor is partially condensed as reflux water containing unreacted diamine which diamine is recovered by returning the reflux water from said lower portion to the reaction zone, wherein the improvement comprises continuously adding a pre-determined amount of said dicarboxylic acid or acids to the reflux water in an upper portion of said rectifying zone to form a water-soluble polyamide-forming salt with unreacted diamine contained therein.

4,380,616

POLYMERIZATION OF OLEFINS IN THE PRESENCE OF CHROMIUM-CONTAINING CATALYSTS

Fred L. Vance, Jr.; Rafael E. Guerra, and Christopher P. Christenson, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 14, 1981, Ser. No. 263,647
Int. Cl.³ C08F 4/02, 4/62
U.S. Cl. 526—101 **18 Claims**

1. In a process for polymerizing one or more a-olefins in the presence of an inorganic oxide supported chromium-containing catalyst wherein said catalyst has been prepared by contacting said inorganic oxide support with a chromium-containing compound followed by activation of an oxidizing atmosphere at an elevated temperature for a time sufficient to activate the catalyst; the improvement which comprises employing as catalyst one prepared by contacting said inorganic oxide support with a metallic composition containing zero valent chromium in the vapor state instead of compounds of such metals and wherein the polymerization is also conducted in the presence of a metal alkyl compound.

4,380,617

PREPARATION OF POLYMERS FROM CYCLOOLEFINS

Robert J. Minchak, Parma Heights; Timothy J. Kettering, Cleveland, and William J. Kroenke, Brecksville, all of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Jan. 20, 1982, Ser. No. 340,921
Int. Cl.³ C08F 4/78
U.S. Cl. 526—161 **10 Claims**

1. Process for preparing a polymer by ring opening polymerization comprising polymerizing a norbornene-type monomer, or a mixture thereof, in presence of an effective amount of at least one organoammonium catalyst and at least one alkylaluminum halide cocatalyst, said norbornene-type monomer is characterized by the presence of the norbornene group defined as follows:

and said organoammonium catalyst is selected from organoammonium molybdates and organoammonium tungstates that are soluble in said monomer or said monomer mixture.

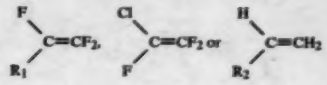
4,380,618

BATCH POLYMERIZATION PROCESS

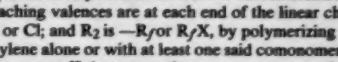
Ausat A. Khan, Newark, Del., and Richard A. Morgan, Vienna, W. Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 21, 1981, Ser. No. 295,019
Int. Cl.³ C08F 2/00, 14/18
U.S. Cl. 526—206 **11 Claims**

1. In the batch process for preparing tetrafluoroethylene homopolymer or copolymers of tetrafluoroethylene and at least one copolymerizable fluorinated ethylenically unsaturated comonomer of the formula



wherein R_1 is $—R_f$, $—R_fX$, $—O—R_f$, or $—O—R_fX$ in which R_f is a perfluoroalkyl radical of 1–5 carbon atoms, $—R_f$ is a linear perfluoroalkylenediradical of 1–5 carbon atoms in which the attaching valences are at each end of the linear chain, and X is H or Cl; and R_2 is $—R_f$ or R_fX, by polymerizing tetrafluoroethylene alone or with at least one said comonomer present in an amount sufficient to produce a comonomer unit content in the copolymer of between 0.005 mole percent and 20 mole percent, in an aqueous polymerization medium containing a free-radical initiator and 0.01–0.5 percent dispersing agent, based on weight of aqueous medium, the improvement which comprises employing as the dispersing agent 1) a mixture of compounds of the formula



wherein n is a cardinal number of between 2–8 and the average value of n is between 3–6, or 2) a compound of said formula wherein n is a cardinal number selected from 2–6, and M is a cation having a valence of 1.

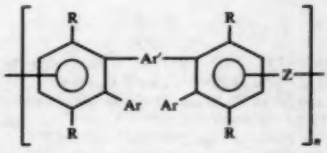
4,380,619

OXY- AND THIOARYL-PHENYLATED AROMATIC HETEROCYCLIC POLYMERS

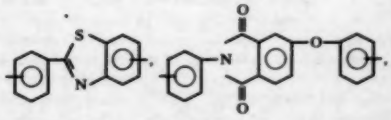
Bruce A. Reinhardt, New Carlisle, and Fred E. Arnold, Centerville, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

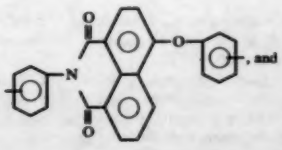
Filed Apr. 8, 1982, Ser. No. 366,744
Int. Cl.³ C08G 2/26, 12/00
U.S. Cl. 526—259 **13 Claims**

1. A polymer consisting essentially of recurring units having the following formula:



wherein Ar is a monovalent aromatic group containing an oxy or thio linkage, Ar' is a divalent aromatic group, R is a monovalent aromatic group, and Z is a divalent heterocyclic radical selected from the group consisting of





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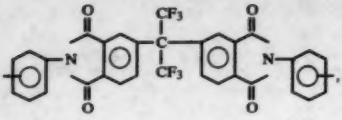


and wherein n is an integer having a value such that the polymer has an intrinsic viscosity in the approximate range of 0.25 to 0.75 as measured in N,N-dimethylacetamide at 30° C.

4,380,620

PROCESS FOR PREPARING POLYOXYMETHYLENES

Kazuhiko Matsuzaki; Minoru Hamada, and Hisaya Sakurai, all of Kurashiki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP80/00307, § 371 Date Aug. 12, 1981, § 102(e) Date Aug. 12, 1981, PCT Pub. No. WO81/01712, PCT Pub. Date Jun. 25, 1981

PCT Filed Dec. 16, 1980, Ser. No. 293,213

Int. Cl.³ C08G 2/08

U.S. Cl. 528—232 20 Claims

1. A process for preparing polyoxymethylene having a desired molecular weight and improved melt fluidity and processability, which comprises: polymerizing formaldehyde in the presence of an anionic polymerization catalyst and in the presence of a polyhydric alcohol having at least three alcoholic hydroxyl groups in the molecule.

4,380,621

FAST CRYSTALLIZING POLYESTER COMPOSITIONS

Eric Nield, Watton-at-Stone; David E. Higgins, Wheathampstead, and Mark W. Young, Barbican, all of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Nov. 28, 1980, Ser. No. 210,754

Claims priority, application United Kingdom, Dec. 12, 1979, 7942872; Mar. 12, 1980, 8008298

Int. Cl.³ C08G 63/16, 63/20

U.S. Cl. 528—287 9 Claims

1. A fast crystallizing polyester wherein the polyester has an intrinsic viscosity of greater than 0.3 as measured on a 1% solution of the polyester in o-chlorophenol at 25° C. and at least 90 mole % of the repeating units of the polyester are selected from ethylene terephthalate or tetramethylene terephthalate units in which at least some of the acid end groups of the polyester have the formula $-Y^-M^+$ where M is an alkaline metal ion and Y is a carboxylate anion, which ionised end groups have been produced during polymerization of the polyester by

reaction of an alkaline metal salt or corresponding base with acid end groups of the polyester produced during the polymerization,

the concentration of groups of formula Y^-M^+ in the polyester being sufficient to reduce the crystallization peak temperature on heating (Tn) by at least 5° C. in comparison with the same polyester in the absence of the ionic groups.

4,380,622

PROCESS FOR PRODUCING ALIPHATIC COPOLYESTERAMIDE, AN ALIPHATIC COPOLYESTERAMIDE AND TUBING MOLDED THEREFROM

Kazumasa Chiba; Kazuhiko Kobayashi, and Toshio Muraki, all of Nagoya, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Jun. 11, 1982, Ser. No. 387,334

Claims priority, application Japan, Jun. 15, 1981, 56-90855; Jan. 22, 1982, 57-7497

Int. Cl.³ C08G 63/44, 69/00, 69/44

U.S. Cl. 528—288 38 Claims

1. A process for producing an aliphatic copolyesteramide which comprises heating a mixture comprising substantially

(A) from about 5 to 80 parts by weight of ester-forming components comprising

(α) aliphatic diols having 2 to 6 carbon atoms and

(β) aliphatic dicarboxylic acids having 9 to 12 carbon atoms and

(B) from about 95 to 20 parts by weight of amide-forming components comprising at least one component selected from the group consisting of

(a) aliphatic ω-aminocarboxylic acids having 11 to 12 carbon atoms and

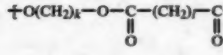
(b) equimolar salt of

(α) aliphatic diamines having 6 to 12 carbon atoms and

(β) aliphatic dicarboxylic acids having 9 to 12 carbon atoms,

at temperatures of about 150° to 260° C., substantially under an atmospheric pressure, in the presence of catalysts and in the substantially absence of water, whereby catalytic esterification is carried out and subsequently heating the resulting esterified product at temperatures of about 200° to 300° C. under a reduced pressure, whereby polycondensation is carried out.

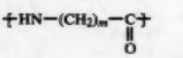
22. An aliphatic copolyesteramide comprising substantially (A) from about 5 to 50 percent by weight of ester unit represented by the following general formula (I)



(I)

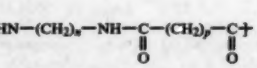
wherein k denotes an integer of 2 to 6 and l denotes an integer of 7 to 10, and

(B) from about 95 to 50 percent by weight of at least one amide unit selected from the group consisting of (a) the unit represented by the following general formula (II),



(II)

wherein m denotes an integer of 10 to 11, and (b) the unit represented by the following general formula (III)



(III)

wherein n denotes an integer of 6 to 12 and p denotes an integer of 7 to 10, said aliphatic copolyesteramide having a relative viscosity of from about 1.4 to 4.0 and a glass transition temperature below about room temperature.

4,380,623

PREPARATION OF POLYAMIDE FROM DINITRILE, DIAMINE, WATER, AND CO_2 CATALYST

Janice L. Greene, Chagrin Falls, and Roman Loza, Solon, both of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Filed Apr. 3, 1981, Ser. No. 250,797
Int. Cl.³ C08G 69/00
U.S. Cl. 528—335 6 Claims

1. A process for preparing a solid polyamide comprising contacting a diamine with water, a dinitrile and a catalytic amount of carbon dioxide.

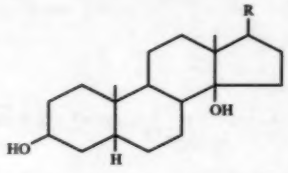
4,380,624

NOVEL ISOMERS OF BUFALIN AND RESIBUFOGENIN AND THEIR PREPARATION

Karel Wiesner, and Thomas Y. R. Tsai, both of Fredericton, Canada, assignors to Advance Biofactures Corp., Lynbrook, N.Y.

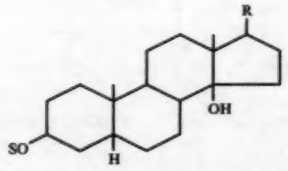
Filed Jul. 31, 1981, Ser. No. 288,763
Int. Cl.³ A61K 31/705, 31/58
U.S. Cl. 536—5 14 Claims

1. A compound having the general formula



wherein R is selected from the group consisting of

2. A compound having the general formula



wherein R is selected from the group consisting of

and wherein S is selected from the group consisting of sugars.

4,380,625

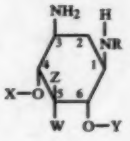
PROCESS FOR THE PREPARATION OF PURIFIED AMINOGLYCOSIDE ANTIBIOTICS

Peter Stadler, Haan; Wolfgang Koebernick, Wuppertal; Samir Samaan, Wuppertal, and Wolfgang Gau, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 29, 1980, Ser. No. 220,640
Claims priority, application Fed. Rep. of Germany, Jan. 11, 1980, 3000841
Int. Cl.³ C07H 15/22
U.S. Cl. 536—13.9 16 Claims

1. A process for the preparation of a pure aminoglycoside antibiotic, which comprises acylating or arylsulphenylating

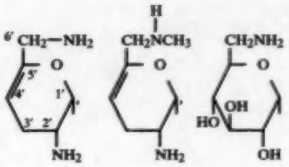
(a) a pre-purified compound of the formula



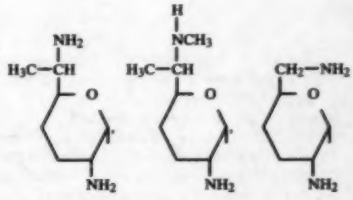
(I)

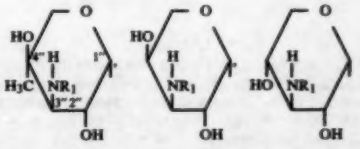
wherein

X denotes a radical of the formulae



Y denotes a radical of the formulae





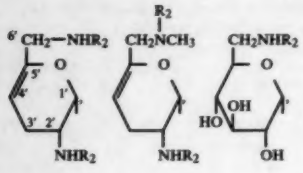
R denotes a hydrogen atom or an ethyl group,

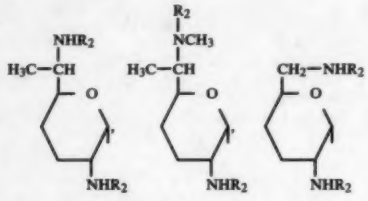
R_1 denotes a C_1 to C_6 alkyl group, and one of the radicals Z or W denotes hydrogen and the other radical Z or W denotes hydrogen or hydroxyl,

to give a compound of the formula

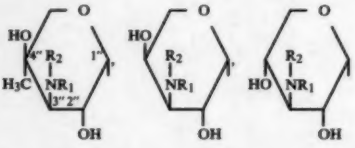
wherein

X′ represents a radical of the formulae





Y′ represents a radical of the formulae



the radicals R_2 are identical or different and represent a hydrogen atom or an acyl or arylsulphenyl protective group, with the proviso that at most two of the radicals R_2 represent hydrogen atoms, and

R, R_1, Z and W have the abovementioned meaning,

(b) subjecting the compound of the formula (II) from step (a) to liquid/liquid extraction in a two-phase aqueous/organic solvent system and isolating said compound of the Formula (II) from the extracts, and

(c) then splitting off the protective group(s).

4,380,626

HORMONAL PLANT GROWTH REGULATOR

Jozsef Szejtli; Zsuzsanna Budai; Magda Tetenyi nee Erdosi, and Gabriella Pap nee Imrenyi, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T., Budapest, Hungary

Filed Dec. 19, 1980, Ser. No. 218,206

Claims priority, application Hungary, Dec. 28, 1979, CI 2000

Int. Cl.³ C08B *37/16*

U.S. Cl. 536—103 **10 Claims**

1. An inclusion complex of 2-chloroethylphosphonic acid formed with α-, β- and/or γ-cyclodextrin.

4,380,627

CATIONIC COMPOUNDS

Willy Stingelin, Reinach, and Peter Loew, Münchenstein, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 6, 1981, Ser. No. 251,421

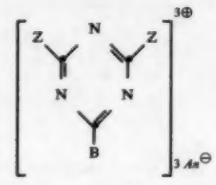
Claims priority, application Switzerland, Apr. 10, 1980, 2757/80

Int. Cl.³ C07D *251/70, 417/12, 417/04, 401/14*

U.S. Cl. 542—423 **14 Claims**

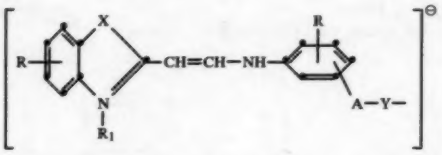
1. A cationic compound of the formula

(II)

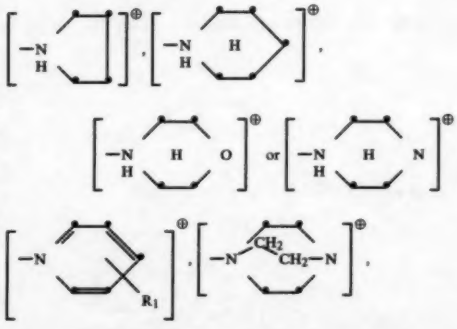


wherein

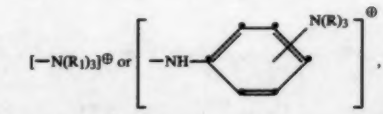
Z groups independently of one another are each a radical of the formula



B is identical to Z or is a cationic radical different from Z selected from the group of



$[-NH(CH_2)_p-N(R_1)_3]^{\oplus}$, $[-NH(CH_2)_p-NH(R_1)_2]^{\oplus}$,



wherein the radicals R and R_1 are as defined below and p is 2 or 3;

R groups independently of one another are each (1) hydrogen, (2) unsubstituted or substituted C_1–C_4-alkyl wherein the substituent is C_1–C_4-alkoxy, CN, halogen, phenyl, $CONH_2$, $CONHC_1$–C_4-alkyl or $CON(C_1$–C_4-alkyl$)_2$, (3)

unsubstituted or substituted C_1–C_4-alkoxy wherein the substituent is phenyl, (4) NO_2, (5) unsubstituted or substituted benzoylamino or acetylamino wherein the substituent is halogen, NH_2, NHC_1–C_4-alkyl or $N(C_1$–C_4-alkyl$)_2$, (6) halogen or (7) CN;

R_1 groups independently of one another are each (1) unsubstituted or substituted C_1–C_4-alkyl wherein the substituent is C_1–C_4-alkoxy, CN, halogen, phenyl, C_1–C_4-alkyl substituted phenyl, halophenyl or $CONH_2$ or (2) C_3–C_4-alkenyl;

X is a sulfur atom or the group

wherein R_1 is as defined above or in which both R_1 radicals can be linked with each other to form a carbocyclic 5- or 6-membered ring;

A is the direct bond, —NH-alkylene (C_1–C_4), —O-alkylene (C_1–C_4), alkylene (C_1–C_4), phenylene, —O-phenylene or —NH-phenylene;

Y is —NH—, —NR_1—, —O— or —S—; and

An is an anion.

4,380,628

PROCESS FOR THE PREPARATION OF AZOLYL-VINYL KETONES

Hans-Ludwig Elbe, Wuppertal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

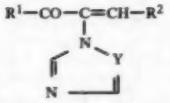
Filed Dec. 22, 1980, Ser. No. 219,154

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1980, 3000643

Int. Cl.³ C07D *233/61, 249/08*

U.S. Cl. 542—429 **15 Claims**

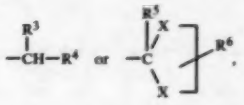
1. A process for the preparation of an azolyl-vinyl ketone of the formula



in which

R^1 represents straight-chain or branched alkyl with 1 to 6 carbon atoms, straight-chain or branched halogenoalkyl with 1 to 4 carbon atoms and 1 to 5 identical or different halogen atoms, or aryl which has 6 to 10 carbon atoms and optionally carries one or more substituents selected independently from halogen, straight-chain or branched alkyl with 1 to 4 carbon atoms, alkoxy and alkylthio with in either case 1 to 2 carbon atoms, halogenoalkyl with up to 2 carbon atoms and up to 5 identical or different halogen atoms, cyano, nitro, optionally halogen-substituted phenyl and optionally halogen-substituted phenoxy,

R^2 represents straight-chain or branched alkyl with 1 to 12 carbon atoms; straight-chain or branched halogenoalkyl with 1 to 4 carbon atoms and 1 to 5 identical or different halogen atoms; aryl which has 6 to 10 carbon atoms and optionally carries one or more substituents selected independently from halogen, straight-chain or branched alkyl with 1 to 4 carbon atoms, halogenoalkyl with up to 2 carbons atoms and up to 5 identical or different halogen atoms, cyano, nitro, optionally halogen-substituted phenyl and optionally halogen-substituted phenoxy; cycloalkyl with 3 to 7 carbon atoms or cycloalkenyl with 5 to 7 carbon atoms, in either case optionally substituted by alkyl with 1 to 4 carbon atoms; cycloalkylalkyl which has 3 to 7 carbon atoms in the cycloalkyl part and 1 to 4 carbon atoms in the straight-chain or branched alkyl part and is optionally substituted by alkyl with 1 to 4 carbon atoms; cycloalkenylalkyl which has 5 to 7 carbon atoms in the cycloalkenyl part and 1 to 4 carbon atoms in the straight-chain or branched alkyl part and is optionally substituted by alkyl with 1 to 4 carbon atoms; furyl or thiophenyl which in either case is optionally substituted by halogen or straight-chain or branched alkyl with 1 to 4 carbon atoms; alkoxyalkyl or alkylmercaptoalkyl with in either case 1 to 4 carbon atoms in each alkyl part; optionally substituted straight-chain or branched alkenyl, alkynyl or alkenynyl with in each case up to 6 carbon atoms, the substituents being selected from hydroxyl, alkoxy with 1 to 4 carbon atoms and phenyl which is optionally substituted by halogen; indenyl or fluorenyl which in either case is optionally substituted by halogen, alkyl with 1 to 4 carbon atoms or alkoxy with 1 to 4 carbon atoms; diphenyl- or triphenylmethyl, wherein each phenyl optionally carries one or more substitutents selected independently from halogen, straight-chain or branched alkyl with 1 to 4 carbon atoms, alkoxy and alkylthio with in either case 1 to 2 carbon atoms, halogenoalkyl with up to 2 carbon atoms and up to 5 identical or different halogen atoms, cyano, nitro, optionally halogen-substituted phenyl and optionally halogen-substituted phenoxy; or the grouping



R^3 represents hydrogen, cyano, straight-chain or branched alkyl with 1 to 4 carbon atoms, akenyl or alkynyl with in either case 2 to 4 carbon atoms, or the grouping —CO_2R^6, —$CONR^7R^8$, —$SO_2NR^7R^8$ or —SO_3H,

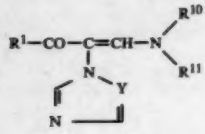
R^4 represents aryl which has 6 to 10 carbon atoms and optionally carries one or more substituents selected independently from halogen, straight-chain or branched alkyl with 1 to 4 carbon atoms, alkoxy and alkylthio with in either case 1 to 2 carbon atoms, halogenoalkyl with up to 2 carbon atoms and up to 5 identical or different halogen atoms, cyano, nitro, optionally halogen-substituted phenyl and optionally halogen-substituted phenoxy; furyl or thiophenyl which in either case is optionally substituted by halogen or alkyl with 1 to 4 carbon atoms; dioxolanyl or dithiolanyl which in either case is optionally substituted by alkyl with 1 to 4 carbon atoms, alkoxyalkyl with 1 to 4 carbon atoms in each alkyl part or benzyl; cyano, or the grouping —CO_2R^6 or —SO_2R^9,

R^5 represents hydrogen; straight-chain or branched alkyl with 1 to 4 carbon atoms; cycloalkyl which has 5 to 7 carbon atoms and is optionally substituted by alkyl with 1 to 2 carbon atoms; aryl which has 6 to 10 carbon atoms and optionally carries one or more substitutents selected independently from halogen, straight-chain or branched alkyl with 1 to 4 carbon atoms, alkoxy and alkylthio with in either case 1 to 2 carbon atoms, halogenoalkyl with up to 2 carbon atoms and up to 5 identical or different halogen atoms, cyano, nitro, optionally halogen-substituted phenyl and optionally halogen-substituted phenoxy;

R^6 represents hydrogen; straight-chain or branched alkyl with 1 to 4 carbon atoms; alkoxyalkyl with 1 to 4 carbon atoms in each alkyl part; or benzyl which optionally carries on the phenyl part one or more substitutents selected independently from halogen, straight-chain or branched alkyl with 1 to 4 carbon atoms, alkoxy and alkylthio with in either case 1 to 2 carbon atoms, halogenoalkyl with up to 2 carbon atoms and up to 5 identical or different halogen atoms, cyano, nitro, optionally halogen-substituted phenyl and optionally halogen-substituted phenoxy,

R^7 and R^8 are identical or different and each represent straight-chain or branched alkyl with 1 to 4 carbon atoms,

R^9 represents straight-chain or branched alkyl with 1 to 4 carbon atoms; or phenyl which optionally carries one or more substitutents selected independently from halogen, straight chain or branched alkyl with 1 to 4 carbon atoms, alkoxy and alkylthio with in either case 1 to 2 carbon atoms, halogenoalkyl with up to 2 carbon atoms and up to 4 identical or different halogen atoms, cyano, nitro, optionally halogen-substituted phenyl and optionally halogen-substituted phenoxy, comprising reacting a keto-enamine of the formula



in which

R^{10} and R^{11} are identical or different and each represent alkyl with 1 to 4 carbon atoms, with an organometallic compound of the formula

$$Z—R^2$$

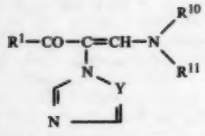
in which

Z represents the group Hal-Mg or an alkali metal or the grouping $LiCuR^2$, and

Hal represents halogen,

in the presence of a solvent.

14. A keto-enamine of the formula



in which

R^1 represents, straight-chain or branched alkyl with 1 to 6 carbon atoms, straight-chain or branched halogenoalkyl with 1 to 4 carbon atoms and 1 to 5 identical or different halogen atoms or aryl which has 6 to 10 carbon atoms and optionally carries one or more substituents selected independently from halogen, straight-chain or branched alkyl with 1 to 4 carbon atoms, alkoxy and alkylthio with in either case 1 to 2 carbon atoms, halogenoalkyl with up to 2 carbon atoms and up to 5 identical or different halogen atoms, cyano, nitro, optionally halogen-substituted phenyl and optionally halogen-substituted phenoxy,

Y is nitrogen or the CH group, and

R^{10} and R^{11} each independently is alkyl with 1 to 4 carbon atoms.

4,380,629

STYRYL-LIKE COMPOUNDS SHOWING A COLOR-DEVELOPING AND BLEACHING BEHAVIOR WITH IMPROVED STABILITY AND PROLONGED LIFETIME

Akio Yamashita, Machida, and Masaaki Hayami, Okayama, both of Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

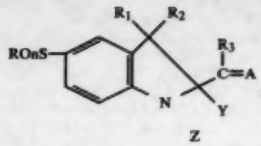
Filed Apr. 20, 1981, Ser. No. 255,374

Claims priority, application Japan, Apr. 21, 1980, 55-53268

Int. Cl.³ C07D 498/04

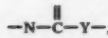
U.S. Cl. 542—455 **9 Claims**

1. A styryl-like compound showing a color-developing and bleaching behavior with improved stability and prolonged lifetime and represented by the genera! formula



Z

in which R represents an alkyl or phenyl group, R_1 and R_2 independently represent a lower alkyl group, a hydroxyalkyl group, or an alkoxyalkyl group, R_3 represents hydrogen, an alkyl group, a halogen, a nitrile group, an aromatic group or a phenoxy group, Y represents O or S, Z represents an alkylene radical or 2 to 4 carbon atoms, with or without alkyl substituent(s), necessary for forming a ring structure together with



A represents a residue of an aromatic aldehyde, selected from the group consisting of benzaldehyde, p-acetaminobenzaldehyde, p-bromobenzaldehyde, m-bromobenzaldehyde, o-bromobenzaldehyde, p-dimethylaminobenzaldehyde, p-diethylaminobenzaldehyde, p-dibutylaminobenzaldehyde, o-chlorobenzaldehyde, p-chlorobenzaldehyde, p-anisaldehyde, o-anisaldehyde, p-tolualdehyde, m-tolualdehyde, o-tolualdehyde, o-ethoxybenzaldehyde, p-ethoxybenzaldehyde, p-fluorobenzaldehyde, o-fluorobenzaldehyde, p-nitrobenzaldehyde, m-nitrobenzaldehyde, o-nitrobenzaldehyde, p-cyanobenzaldehyde, o-cyanobenzaldehyde, 2,4-dichlorobenzaldehyde, 2,6-dichlorobenzaldehyde, 3,4-dichlorobenzaldehyde, 3,5-dichlorobenzaldehyde, 2,4-dimethoxybenzaldehyde, 2,5-dimethoxybenzaldehyde, 3,4-dimethoxybenzaldehyde, 3,5-dimethoxybenzaldehyde, 2,4-dimethylbenzaldehyde, 2,5-dimethylbenzaldehyde, 3,4-dimethylbenzaldehyde, 3,5-dimethylbenzaldehyde, veratraldehyde(3,4-dimethoxybenzaldehyde), 4-isopropylbenzaldehyde, o-(2-chloroethyl)benzaldehyde, 2,4,6-trimethylbenzaldehyde(mesitylaldehyde), 2,4,6-triethoxybenzaldehyde, 3,4-dimethyl-p-anisaldehyde, 2,5-dimethyl-p-anisaldehyde, 2-chloro-5-nitrobenzaldehyde, 2-chloro-6-nitrobenzaldehyde, 2-chloro-3-nitrobenzaldehyde, 5-chloro-2-nitrobenzaldehyde, vanilin, o-vanilin, iso-vanilin, 5-bromo-vanilin, 2-chloro-4-dimethylaminobenzaldehyde, 2-chloro-6-fluorobenzaldehyde, 5-bromo-veratraldehyde, 6-bromo-veratraldehyde, 5-bromo-2-methoxybenzaldehyde, 1-naphthaladhyde, 2-naphthaladehyde, p-dimethylaminocinnamaldehyde, p-diethylcinnamaldehyde, p-nitrocinnamaldehyde, o-nitrocinnamaldehyde, 2-chlorocinnamaldehyde, 9-anthraldehyde, 10-chloro-9-anthraldehyde, 9-phenanthrenecarboxaldehyde and fluorencarboxaldehyde; a heterocyclic aldehyde, selected from the group consisting of furfural, 5-methylfurfural, 5-bromofurfural, 4-isopropylfurfural, 2-thiophenecarboxaldehyde, 5-methylthiophenecarboxaldehyde, 9-methoxythiophene-2-carboxaldehyde, 2-pyridinecarboxaldehyde, 3-pyridinecarboxaldehyde, 4-pyridinecarboxaldehyde, 1-ethylindole-3-carboxaldehyde, 1-methylindole-3-carboxaldehyde, 1-methyl-2-phenylindole-3-carboxaldehyde, N-methylcarbazole-2-carboxaldehyde, N-ethyl-7-bromocarbazole-2-carboxaldehyde, N-(n-octyl)-7-nitrocarbazole-2-carboxaldehyde, benzofuran-2-carboxaldehyde, dibenzofuran-2-carboxaldehyde, pyrrole-2-aldehyde, N-methylpyrrole-2-aldehyde, N-phenylpyrrole-2-aldehyde, 3-methylpyrrole-2-aldehyde, 2-ethylpyrrole-5-aldehyde, benzothiazole-2-aldehyde, 6-methylbenzothiazole-2-aldehyde, 6-chlorobenzothiazole-2-aldehyde, 5-chlorobenzothiazole-2-aldehyde, 6-methoxybenzothiazole-2-aldehyde, 5,6-dichlorobenzothiazole-2-aldehyde, benzoselenazole-2-aldehyde, 6-methoxybenzoselenazole-2-aldehyde, 2,4-dimethylpyrrole-2-aldehyde, 4,6-dichloropyrimidine-5-carboxaldehyde, 2-formyl-4,6-dimethylpyrimidine, quinoline-2-aldehyde, acridine-10-aldehyde, 2,4-diphenyl-

5,6,7-hexahydrobenzopyran-8-carboxaldehyde, and 2,4-diphenyl-6-methyl-5,6,7-pentahydrobenzopyran-8-carboxaldehyde; an aromatic nitroso compound selected from the group consisting of p-dimethylaminonitrosobenzene, p-diethylaminonitrosobenzene, p-methylnitroxobenzene (p-nitrosotoluene), p-nitronitrosobenzene, o-nitronitrosobenzene, and 3-nitroso-2-nitrotoluene; or a heterocyclic nitroso compound selected from the group consisting of 3-nitrosoindole, 2-methyl-3-nitrosoindole (3-nitrosomethyl-ketol), 3-nitroso-2-phenylindole and the like, and n is an integer of 2 or 3.

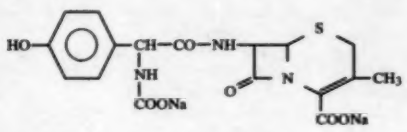
4,380,630

N-CARBOXY CEFADROXIL SODIUM SALT

Marco Falciani, and Renato Broggi, both of Milan, Italy, assignors to Dobfar S.p.A., Milan, Italy

Filed Mar. 4, 1981, Ser. No. 240,311
Claims priority, application Italy, Apr. 1, 1980, 21096 A/80
Int. Cl.³ C07D 501/22
U.S. Cl. 544—30 1 Claim

1. The N-carboxy cefadroxil disodium salt having formula



4,380,631

PREPARATION OF CAFFEINE

Kaspar Bott, Wachenheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 19, 1982, Ser. No. 359,839
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1981, 3113880
Int. Cl.³ C07D 473/12
U.S. Cl. 544—275 2 Claims

1. A process for the preparation of caffeine which comprises reacting methanol and carbon monoxide with an alkali metal salt of theophylline at a temperature of from 120° to 170° C. and under a carbon monoxide pressure of from 25 to 100 bar.

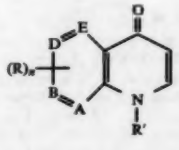
4,380,632

METHOD OF PREPARING QUINOLINES, NAPHTHYRIDINES AND OTHER NITROGEN BI-HETEROCYCLIC COMPOUNDS

Klaus-Dieter Steffen, Hennef, Fed. Rep. of Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Jul. 24, 1981, Ser. No. 286,432
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1980, 3028520
Int. Cl.³ C07D 471/00, 487/00, 215/16, 215/20
U.S. Cl. 544—279 21 Claims

1. A method for preparing a nitrogen heterocyclic of the formula



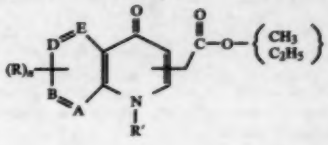
(I)

wherein

R=hydrogen, halogen, nitro, amino, keto, alkyl, alkenyl, substituted aryl, unsubstituted aryl, haloalkyl or aryl or alkyl substituents having a nitrogen, oxygen sulfur or SO_2 moiety in the chain or in a cyclic arrangement;

R′=hydrogen, aryl, alkyl, alkenyl or haloalkyl; A, B, D, E, represent nitrogen or carbon atoms with up to 3 of said A, B, and D, representing nitrogen and the balance representing carbon atoms;

n is an integer from 0 to 4 which comprises saponifying a compound of the formula



(II)

wherein

R, E, D, B, A, and R′ have the previously assigned significance by contacting the same with at least a stoichiometric amount of water in the presence of an acid catalyst in an amount of 0.05 to 3 weight percent under a pressure of 4 to 8 bars distilling out the alkanol, neutralizing the acid, and thereafter decarboxylating the so-saponified compound without isolating the product of saponification.

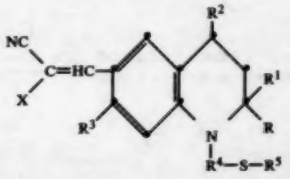
4,380,633

METHINE DYES FROM TETRAHYDROQUINOLINE COMPOUNDS CONTAINING N-THIOETHER SUBSTITUENTS

Clarence A. Coates, Jr., and Max A. Weaver, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 26,846, Apr. 4, 1979, Pat. No. 4,260,742, which is a division of Ser. No. 802,090, May 31, 1977, Pat. No. 4,161,601. This application Dec. 1, 1980, Ser. No. 212,049
Int. Cl.³ C07D 401/12, 413/12, 417/12
U.S. Cl. 544—316 9 Claims

1. A compound of the formula



wherein X is selected from cyano, carbamoyl, lower alkylcarbamoyl, lower alkoxycarbonyl, lower alkylsulfonyl, and phenylsulfonyl; R, R^1, and R^2 are independently selected from hydrogen and lower alkyl; R^3 is selected from hydrogen, lower alkyl, lower alkoxy, fluorine, chlorine, and bromine; R^4 is lower alkylene; and R^5 is selected from hydroxyethyl, acetoxyethyl, cyclohexyl, methylcyclohexyl, p-chlorophenylethyl, pyridyl, quinolyl, pyrimidinyl, thiadiazolyl, pyrazyl, and oxdiazolyl radicals.

4,380,634

METHOD OF PREPARING 2-KETO-4,6,8,8-TETRAMETHYL-8,9-DIHYDRO-2H-PYRANO-(3,2-G) QUINOLINE, A BLUE-GREEN LASER DYE

Ronald L. Atkins, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 951,907, Oct. 16, 1978, abandoned. This application Oct. 5, 1981, Ser. No. 308,014

Int. Cl.³ C07D 471/04

U.S. Cl. 546—89 **2 Claims**

1. A method for preparing 2-keto-4,6,8,8-tetramethyl-8,9-dihydro-2H-pyrano(3,2-g) quinoline consisting of:

mixing m-aminophenol and ethyl acetoacetate in the molar ratio of approximately 1:2 to form a mixture in the absence of a catalyst, or solvent;

heating said mixture at 150° C.; and

filtering 2-keto-4,6,8,8-tetramethyl-8,9-dihydro-2H-pyrano(3,2-g) quinoline.

4,380,635

SYNTHESIS OF ACYLATED BENZOTHIOPHENES

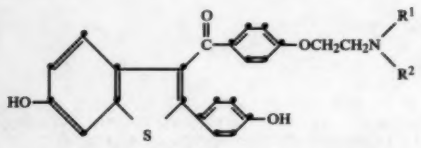
Mary K. Peters, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 246,333, Apr. 3, 1981, abandoned. This application Dec. 16, 1981, Ser. No. 331,046

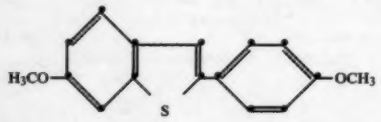
Int. Cl.³ C07D 333/64

U.S. Cl. 546—202 **13 Claims**

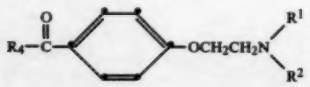
1. A process for preparing a compound of the formula



wherein R^1 and R^2 are independently C_1–C_4 alkyl, or combine to form C_4–C_6 polymethylene, $—CH_2CH(CH_3)CH_2CH_2—$ or $—(CH_2)_2O(CH_2)_2—$; which process comprises acylating a compound of the formula



in the presence of aluminum chloride or aluminum bromide with an acylating agent of the formula



wherein R^4 is chloro or bromo; and adding to the reaction mixture a sulfur compound chosen from the group consisting of methionine and compounds of the formula

X—S—Y

wherein X is hydrogen or unbranched C_1–C_4 alkyl, and Y is C_1–C_4 alkyl or phenyl.

4,380,636

PROCESS FOR FORMING ESTERS (II)

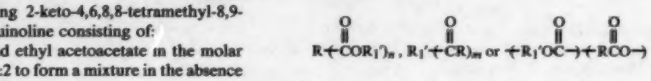
James M. Renga, and Pen-Chung Wang, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 295,429, Aug. 24, 1981, abandoned. This application Jun. 11, 1982, Ser. No. 387,587

Int. Cl.³ C07D 211/78, 333/24; C07C 79/46, 69/76

U.S. Cl. 546—326 **14 Claims**

1. A process for preparing an ester or polyester corresponding to the formula:



wherein

m and n are one or two;

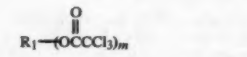
R is an aromatic or aliphatic moiety of up to 20 carbons having valence n selected from the group consisting of carbocyclic or nitrogen-, sulfur- or oxygen-containing heterocyclic aromatic groups, alkyl, cycloalkyl, alkylene or cycloalkylene groups and derivatives thereof containing noninterfering substituents;

R_1' is R_1 or a group of up to about 20 carbons having valence m selected from the group consisting of primary alkyl, substituted primary alkyl, primary alkylene, substituted primary alkylene and substituted aryl wherein the ring substituent or substituents are electron-withdrawing groups located in the ortho- or para-position; and

R_1 is a moiety of up to about 6 carbons having valence m selected from the group consisting of primary alkyl, primary alkylene, cycloalkyl, and primary alkenyl,

provided that in at least one occurrence R_1' is not R_1,

comprising contacting a carboxylic acid of the formula $R—(COOH)_n$ wherein R and n are as previously defined with an organic ester of trichloroacetic acid corresponding to the formula



wherein R_1 and m are as previously defined in the presence of a catalytic amount of an initiator at a temperature from about 100° C. to about 180° C. in the presence of an electrophilic halide esterifying agent of up to about 20 carbons selected from the group consisting of primary alkyl halides, substituted primary alkyl halides, primary alkylene dihalides, substituted primary alkylene dihalides and ring-substituted aromatic halides wherein the ring substituent or substituents are strongly electron-withdrawing groups located in the ortho- or para-position and subsequently recovering the ester or polyester formed.

4,380,637

IMIDAZOLINE PHOSPHOBETAINES

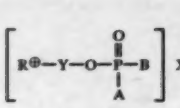
Martin K. O. Lindemann, Bridgewater; Raymond L. Mayhew, Summit; Anthony J. O'Lenick, Jr., Fairlawn, and Robert J. Verdicchio, Succasunna, all of N.J., assignors to Johnson & Johnson/Mona Industries, Inc., New Brunswick, N.J.

Continuation of Ser. No. 95,182, Nov. 16, 1979, abandoned, which is a division of Ser. No. 965,461, Nov. 30, 1978, Pat. No. 4,215,064. This application Jan. 11, 1982, Ser. No. 338,728

Int. Cl.³ C07F 9/65

U.S. Cl. 548—112 **6 Claims**

1. Phosphobetaine compound of the formula



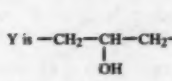
wherein

A is selected from $O^{\ominus}$, OM and —O—Y—$R^{\oplus}$;

B is selected from $O^{\ominus}$ and OM';

$X^{\ominus}$ is an anion;

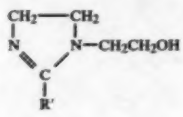
z is an integer from 0 to 2; with the proviso that only one of A and B can be $O^{\ominus}$ and z is of a value necessary for charge balance;



M is selected from hydrogen and a salt radical selected from alkali metals alkaline earth metals and mono, di- or triethanolamine;

M' is an organic radical selected from alkyl, hydroxyalkyl or polyhydroxyalkyl of up to 6 carbon atoms; and

R is a 2-alkyl-1-hydroxyethyl imidazoline of the formula



wherein

R' is alkyl of from 5 to 21 carbon atoms.

4,380,638

CHEMICAL COMPOUNDS

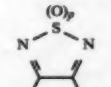
Ronnie R. Crenshaw, Dewitt, and Aldo A. Algieri, Fayetteville, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 240,034, Mar. 3, 1981, which is a continuation-in-part of Ser. No. 163,831, Jul. 7, 1980, abandoned, which is a continuation-in-part of Ser. No. 117,182, Jan. 31, 1980, abandoned, which is a continuation-in-part of Ser. No. 72,517, Sep. 4, 1979, abandoned. This application Jun. 23, 1981, Ser. No. 276,602

Int. Cl.³ C07D *285/10*

U.S. Cl. 548—135 **23 Claims**

1. A compound of the formula



wherein p is 1 or 2;

R^7 is a leaving group selected from halogen, (lower)alkoxy, (lower)alkylthio, phenoxy, phenylthio, substituted phenoxy and substituted phenylthio wherein the phenyl ring may contain 1 or 2 substituents selected from halogen, (lower)alkyl, (lower)alkoxy and nitro; and

R^{12} is $A(CH_2)_mZ(CH_2)_nNH$—, R^2R^3N— or $HS(CH_2)_nNH$—; in which R^2 and R^3 each are independently hydrogen, (lower)alkyl, (lower)alkenyl, (lower)alkynyl, cyclo(lower)alkyl(lower)alkyl, hydroxy(lower)alkyl, (lower)alkoxy(lower)alkyl, (lower)alkylthio(lower)alkyl, 2-fluoroethyl, 2,2,2-trifluoroethyl or cyano(lower)alkyl, or, when R^2 is hydrogen, R^3 may also be cyclo(lower)alkyl, amino(lower)alkyl, (lower)alkylamino(lower)alkyl, di(lower)alkylamino(lower)alkyl, pyrrolidino(lower)alkyl, piperidino(lower)alkyl, piperazino(lower)alkyl, substituted pyridyl(lower)alkyl wherein the pyridyl ring may contain one substituent selected from (lower)alkyl, (lower)alkoxy, hydroxy, amino and halogen, amino, (lower)alkylamino, di(lower)alkylamino, hydroxy, (lower)alkoxy, 2,3-dihydroxypropyl, cyano, amidino, (lower)alkylamidino, phenyl, phenyl(lower)alkyl, substituted phenyl or substituted phenyl(lower)alkyl, wherein the phenyl ring may contain one or two substituents independently selected from (lower)alkyl, hydroxy, (lower)alkoxy and halogen or one substituent selected from methylenedioxy, trifluoromethyl and di(lower)alkylamino; or R^2 and R^3, taken together, may be $—CH_2CH_2X(CH_2)_r—$;

r is an integer of from 1 to 3, inclusive;

X is methylene, sulfur, oxygen or N—R^4, provided that, when p is 2 and R^7 is methoxy, R^2 and R^3 taken together with the nitrogen to which they are attached, may not be morpholino, and that, when r is 1, X is methylene;

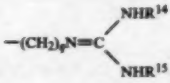
R^4 is hydrogen, (lower)alkyl, (lower)alkenyl, (lower)alkynyl, (lower)alkanoyl or benzoyl;

m is an integer of from zero to 2, inclusive;

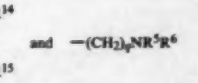
n is an integer of from 2 to 4, inclusive;

Z is sulfur, oxygen or methylene;

A is phenyl, imidazolyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, triazolyl, thiadiazolyl, oxadiazolyl, furyl, thienyl or pyridyl; provided that A may contain one or two substituents, the first substituent being selected from (lower)alkyl, hydroxy, trifluoromethyl, halogen, amino, hydroxymethyl, (lower)alkoxy,



and



and the second substituent being selected from (lower)alkyl, hydroxy, trifluoromethyl, halogen, amino, hydroxymethyl and (lower)alkoxy;

q is an integer of from 0 to 6, inclusive;

R^{14} and R^{15} independently are hydrogen or (lower)alkyl, or if R^{14} is hydrogen, R^{15} also may be (lower)alkanoyl or benzoyl, or R^{14} and R^{15}, taken together, may be ethylene; and

R^5 and R^6 each are independently hydrogen, (lower)alkyl, (lower)alkenyl, (lower)alkynyl, (lower)alkoxy(lower)alkyl, cyclo(lower)alkyl or phenyl, provided that R^5 and R^6 may not both be cyclo(lower)alkyl or phenyl; or R^5 and R^6, taken together with the nitrogen atom to which they are attached, may be pyrrolidino, methylpyrrolidino, dimethylpyrrolidino, piperidino, methylpiperidino, dimethylpiperidino, hydroxypiperidino, homopiperidino, heptamethyleneimino or octamethyleneimino;

or a salt, hydrate, solvate or N-oxide thereof.

4,380,639

SUBSTITUTED 1,2,5-THIADIAZOLE DERIVATIVES

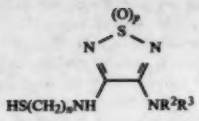
Ronnie R. Crenshaw, Dewitt, and Aldo A. Algieri, Fayetteville, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 240,034, Mar. 3, 1981, which is a continuation-in-part of Ser. No. 163,831, Jul. 7, 1980, abandoned, which is a continuation-in-part of Ser. No. 117,182, Jan. 31, 1980, abandoned, which is a continuation-in-part of Ser. No. 72,517, Sep. 4, 1979, abandoned. This application Jun. 23, 1981, Ser. No. 276,606

Int. Cl.³ C07D *285/10*

U.S. Cl. 548—135 **5 Claims**

1. A compound of the formula



wherein

p is 1 or 2;

n is an integer of from 2 to 4, inclusive;

R^2 and R^3 each are independently hydrogen, (lower)alkyl, (lower)alkenyl, (lower)alkynyl, cyclo(lower)alkyl(lower-)alkyl, hydroxy(lower)alkyl, (lower)alkoxy(lower)alkyl, (lower)alkylthio(lower)alkyl, 2-fluoroethyl, 2,2,2-trifluoroethyl or cyano(lower)alkyl, or, when R^2 is hydrogen, R^3 may also be cyclo(lower)alkyl, amino(lower)alkyl, (lower)alkylamino(lower)alkyl, di(lower)alkylamino(lower)alkyl, pyrrolidino(lower)alkyl, piperidino(lower)alkyl, morpholino(lower)alkyl, piperazino(lower)alkyl, pyridyl(lower)alkyl, substituted pyridyl(lower-)alkyl wherein the pyridyl ring may contain one substituent selected from (lower)alkyl, (lower)alkoxy, hydroxy, amino and halogen, amino, (lower)alkylamino, di(lower-)alkylamino, hydroxy, (lower)alkoxy, 2,3-dihydroxypropyl, cyano, amidino, (lower)alkylamidino, A'—$(CH_2)_{m'}$Z'$(CH_2)_{n'}$—, phenyl, phenyl(lower)alkyl, substituted phenyl or substituted phenyl(lower)alkyl, wherein the phenyl ring may contain one or two substituents independently selected from (lower)alkyl, hydroxy, (lower)alkoxy and halogen or one substituent selected from methylenedioxy, trifluoromethyl and di(lower)alkylamino; or R^2 and R^3, taken together, may be —$CH_2CH_2X(CH_2)_r$—;

r is an integer of from 1 to 3, inclusive;

X is methylene, sulfur, oxygen or N-R^4, provided that, when r is 1, X is methylene;

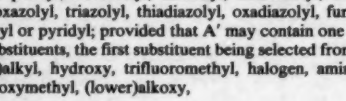
R^4 is hydrogen, (lower)alkyl, (lower)alkenyl, (lower)alkynyl, (lower)alkanoyl or benzoyl;

m' is an integer of from zero to 2, inclusive;

n' is an integer of from 2 to 4, inclusive;

Z' is sulfur, oxygen or methylene;

A' is phenyl, imidazolyl, thiazolyl, isothiazolyl, oxazolyl, isoxazolyl, triazolyl, thiadiazolyl, oxadiazolyl, furyl, thienyl or pyridyl; provided that A' may contain one or two substituents, the first substituent being selected from (lower)alkyl, hydroxy, trifluoromethyl, halogen, amino, hydroxymethyl, (lower)alkoxy,



and the second substituent being selected from (lower)alkyl, hydroxy, trifluoromethyl, halogen, amino, hydroxymethyl and (lower)alkoxy;

q is an integer of from 0 to 6, inclusive;

R^{14} and R^{15} independently are hydrogen or (lower)alkyl, or, if R^{14} is hydrogen, R^{15} also may be (lower)alkanoyl or benzoyl, or R^{14} and R^{15}, taken together, may be ethylene; and

R^5 and R^6 each are independently hydrogen, (lower)alkyl, (lower)alkenyl, (lower)alkynyl, (lower)alkoxy(lower)alkyl, cyclo(lower)alkyl, phenyl or phenyl(lower)alkyl, provided that R^5 and R^6 may not both be cyclo(lower)alkyl or phenyl; or R^5 and R^6, taken together with the nitrogen atom to which they are attached, may be pyrrolidino, methylpyrrolidino, dimethylpyrrolidino, morpholino, thiomorpholino, piperidino, methylpiperidino, dimethylpiperidino, hydroxypiperidino, N-methylpiperazino, homopiperidino, heptamethyleneimino or octamethyleneimino; or a salt, hydrate, solvate or N-oxide thereof.

4,380,640

NOVEL BENZTHIAZOLYLUREA DERIVATIVES, COMPOSITIONS CONTAINING THEM AND THEIR USE AS HERBICIDES

Hans-Georg Brunner, Lausen, and Werner Föry, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

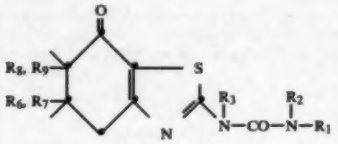
Filed Jan. 12, 1981, Ser. No. 224,583

Claims priority, application Switzerland, Jan. 21, 1980, 464/80

Int. Cl.³ C07D *277/82, 417/12*

U.S. Cl. 548—163 **10 Claims**

1. A benzthiazolylurea of the formula



wherein

R_1 is hydrogen or C_1–C_4 alkyl,

R_2 is C_1–C_6 alkyl or methoxy,

or

R_1 and R_2 together with the nitrogen atom to which they are attached form a piperidino or pyrrolidino group which can be substituted by C_1–C_3 alkyl, and

each of R_6, R_7, R_8 and R_9 is hydrogen or non-sterically hindering C_1–C_4 alkyl.

4,380,641

INSECTICIDAL OXAZOLYL UREAS

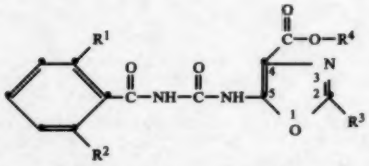
Emily J. Canada, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 26, 1981, Ser. No. 315,130

Int. Cl.³ C07D *263/34;* **A01N** *43/28*

U.S. Cl. 548—233 **10 Claims**

1. A compound of the formula:



wherein:

R^1 is halogen or methoxy;

R^2 is hydrogen or halogen;

R^3 is hydrogen, methyl or ethyl;

R^4 is C_1–C_4 alkyl;

with the provisos that when R^4 is ethyl and one of R^1 and R^2 is chlorine, the other of R^1 and R^2 must be other than chlorine; and when R^2 is hydrogen and R^4 is ethyl, R^1 is other than chlorine.

4,380,642

SIMULTANEOUS PREPARATION OF PYRAZOLE AND TRIAZOLES

Norbert Rieber; Rolf Platz, both of Mannheim, and Werner Fuchs, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

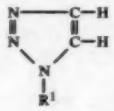
Filed Jul. 17, 1981, Ser. No. 284,398

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1980, 3031347

Int. Cl.³ C07D *249/04, 249/06, 231/12*

U.S. Cl. 548—255 8 Claims

1. A process for the simultaneous preparation of pyrazole and triazoles of the formula



I

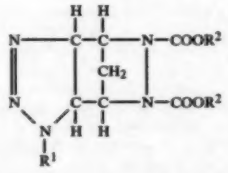
where

R^1 is:

hydrogen; or

alkyl of 1 to 18 carbon atoms, cycloalkyl of 5 to 8 carbon atoms, aralkyl or alkylaryl of 7 to 12 carbon atoms; or

phenyl or naphthyl which are unsubstituted or substituted by from 1 to 5 bromine atoms, fluorine atoms, chlorine atoms, iodine atoms, nitro groups, dialkylamino groups of 1 to 4 carbon atoms per alkyl group and/or alkoxy groups of 1 to 4 carbon atoms, and where R^1 may be additionally substituted by halogen, nitro or alkyl or alkoxy each of 1 to 4 carbon atoms, which process comprises a first step of reacting a triazoline compound of the formula



II

where R^1 has the above meaning and R^2 is hydrogen, alkyl of 1 to 18 carbon atoms or said alkyl additionally substituted by halogen, nitro or alkyl or alkoxy each of 1 to 4 carbon atoms, with a basic compound and, thereafter, a second step of oxidizing the product of said first step with hydrogen peroxide.

4,380,643

BENZOTRIAZOLE COMPOUND AND HOMOPOLYMER OR COPOLYMERS THEREOF

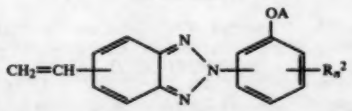
Shohei Yoshida, Kanagawa, Japan, and Otto Vogl, Amherst, Mass., assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Aug. 24, 1981, Ser. No. 295,545

Int. Cl.³ C07D *249/20*

U.S. Cl. 548—260 3 Claims

1. A benzotriazole compound of the formula:



wherein A is hydrogen or acetyl; R^2 is a C_1–C_4 alkyl group and n is 1 or 2.

4,380,644

2-OXOIMIDAZOLIDINE DERIVATIVES

Naoto Yoneda, Suita; Jyoji Kato, Yawata, and Keizo Kinashi, Yao, all of Japan, assignors to Tanabe Siyaku Co., Ltd., Japan

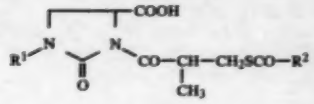
Filed Aug. 7, 1981, Ser. No. 291,105

Claims priority, application Japan, Nov. 21, 1980, 55-164829

Int. Cl.³ C07D *233/26*

U.S. Cl. 548—321 2 Claims

1. A 2-oxoimidazolidine derivative of the formula:



wherein R^1 is methyl, ethyl or benzyl and R^2 is phenyl, or a pharmaceutically acceptable salt thereof.

4,380,645

PROCESS FOR PREPARING BENZOXEPINO- OR BENZTHIAPINO[4,3-B]PYRROLE-2-ACETIC ACIDS

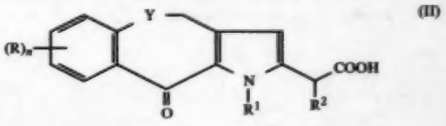
Bruce E. Witzel, Rahway; Paul E. Finke, Metuchen, and Debra L. Allison, Scotch Plains, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 11, 1981, Ser. No. 329,842

Int. Cl.³ C07D *491/044, 495/04*

U.S. Cl. 548—430 10 Claims

1. A process for preparing a compound of formula (II)



(II)

wherein:

Y is O or S;

n is an integer from 1 to 4;

R is

(a) hydrogen;

(b) lower alkyl;

(c) halo-loweralkyl;

(d) hydroxy or loweralkoxy;

(e) —OCH_2O— when n is 2 and the two Rs join together to form the methylenedioxy group;

(f) halo;

(g) lower alkylthio;

(h) lower alkylsulfinyl;

(i) lower alkylsulfonyl; or

(j) lower alkenyl;

R^1 is

(a) hydrogen;

(b) lower alkyl;

(c) lower alkenyl;

(d) aralkyl; and

R^2 is

(a) hydrogen;

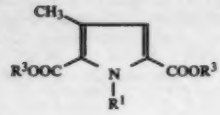
(b) lower alkyl;

(c) halo; or

(d) loweralkoxy;

comprising:

(1) Halogenating a compound of formula (III)



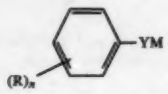
(III)

wherein:

R^1 is as previously defined; and

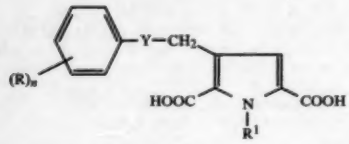
R^3 is lower alkyl;

(2) Treating the resultant 4-halomethyl derivative from Step (1) with a compound of formula



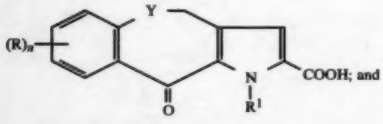
wherein R, n, and Y are as previously defined; and M is an alkali metal cation;

(3) Hydrolyzing the resultant 4—$(R)_nC_6H_{5-n}$—Y-CH_2- derivative from Step (2) to a diacid of formula (V)



(V)

(4) Inducing intramolecular ring closure of the diacid (V) by treatment with a condensing agent to form a tricyclic carboxylic acid of formula (VI)



(VI)

(5) Extending the carboxylic acid side chain of the tricyclic compound (VI) by the Arndt Eistert procedure which further comprises:

(a) converting the tricyclic carboxylic acid (VI) to its corresponding acid chloride;

(b) treating the acid chloride with a diazoalkane to form the corresponding diazoketone of compound (VI);

(c) causing the diazoketone to rearrange to a homologous acid of formula (II) in the presence of a metal salt and a solvent.

4,380,646

METHOD FOR THE N-ACYLATION OF AMINOCARBOXYLIC ACIDS

Giselher Franzmann, Witten, Fed. Rep. of Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

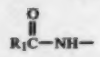
Filed Jan. 29, 1981, Ser. No. 229,433

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1980, 3003898

Int. Cl.³ C07D *209/20;* **C07C** *103/34, 103/76*

U.S. Cl. 548—502 **18 Claims**

1. A process for the preparation of an



acylated 3,4-di-hydroxyphenyl alanine or a naturally occurring aminocarboxylic acid, which comprises the step of contacting its alkali metal or alkaline earth metal salt with a lower alkyl carboxylic acid ester of the formula

$$R_1\text{-CO-O-}R_2,$$

wherein R_1 represents hydrogen or a straight-chain or branched or cyclic hydrocarbon moiety of 1 to 30 carbon atoms, and wherein R_2 represents a straight-chain, branched or cyclic hydrocarbon moiety of 1 to 8 carbon atoms, in the presence of an alkali metal or alkaline earth metal alcoholate.

4,380,647

2-AMINOPYRROLIN 5-ONES AND AMINOCYCLOPROPYL ISOCYANATES THEREFROM

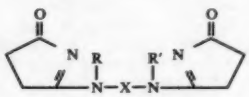
Tad H. Koch, and Barry J. Swanson, both of Boulder, Colo., assignors to University Patents, Inc., Norwalk, Conn.

Filed Mar. 3, 1981, Ser. No. 240,043

Int. Cl.³ C07D *207/26;* **C07C** *118/00, 119/045*

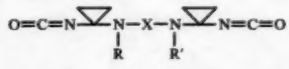
U.S. Cl. 548—519 **14 Claims**

1. Bis-(2-aminopyrrolin-5-ones) characterized by the structure



where R and R′ are hydrocarbyl substituents containing from 1 to about 12 carbon atoms and are selected from the class consisting of alkyl, aryl, alkaryl, and aralkyl groups, and X is a substantially rigid bridging unit selected from the group consisting of 1,4-substituted butyne-2, 1,4-substituted trans-butene-2, bis-methyl substituted m-xylene, bis-methyl substituted p-xylene, and said hydrocarbyl substituted derivatives thereof.

7. Bis-(aminocyclopropyl isocyanates) characterized by the structure



where R and R′ are hydrocarbyl substituents containing from 1 to about 12 carbon atoms and are selected from the class consisting of alkyl, aryl, alkaryl, and aralkyl groups, and X is a substantially rigid bridging unit selected from the group consisting of 1,4-substituted butyne-2, 1,4-substituted trans-butene-2, bis-methyl substituted m-xylene, bis-methyl substituted p-xylene, and said hydrocarbyl substituted derivatives thereof.

4,380,648

OXIDATION OF BUTANE TO MALEIC ANHYDRIDE

Carl A. Udovich, Joliet, and Bernard L. Meyers, Wheaton, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 149,842, May 14, 1980, Pat. No. 4,283,288. This application Mar. 25, 1981, Ser. No. 247,361

Int. Cl.³ C07D *307/60*

U.S. Cl. 549—259 **3 Claims**

1. A process for the preparation of maleic anhydride which comprises contacting a feedstock consisting of n-butane and a gas containing molecular oxygen in the vapor phase in the presence of a phosphorus-vanadium mixed oxide catalyst the

atomic ratio of vanadium to phosphorus being in the range of 0.5:1 to 1.25:1 wherein the catalyst has a characteristic powder X-ray diffraction pattern using copper K alpha radiation as follows:

d angstrom	Line Position 2.0 degrees	Intensity
5.7	15.6	67
4.5	19.7	47
3.7	24.3	36
3.3	27.1	53
3.1	28.8	26
2.9	30.5	100
2.8	32.2	17
2.7	33.7	20

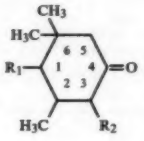
4,380,649

ISOPHORONE DERIVATIVES

Joseph E. Dunbar, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 23, 1981, Ser. No. 324,193
Int. Cl.³ C07D *309/38, 311/18*
U.S. Cl. 549—285 **7 Claims**

1. A compound of the formula

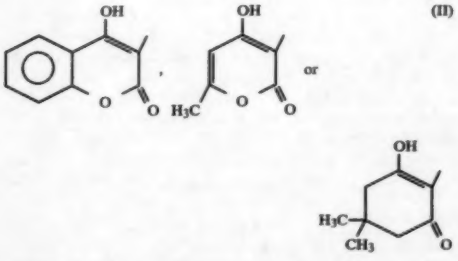


(I)

wherein

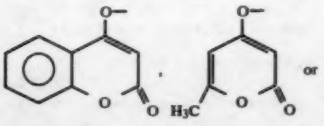
the dotted line represents a double bond in the 1–2 or the 2–3 ring position;

when R_1 represents



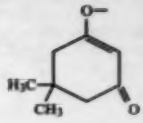
(II)

then R_2 is hydrogen and the double bond is in the 1–2 ring position; otherwise R_1 represents hydrogen, and R_2 represents



(III)

-continued



and the double bond is in the 2–3 ring position.

4,380,650

LACTONE PROCESS

James P. Coleman; Richard C. Hallcher, both of Maryland Heights, and Dudley E. McMackins, St. Charles, all of Mo., assignors to Monsanto Company, St.Louis, Mo.

Filed Jan. 2, 1981, Ser. No. 222,199
Int. Cl.³ C07D *307/32*
U.S. Cl. 549—326 **22 Claims**

1. The process of converting acyloxyhexenoic acids selected from 6-acyloxy-4-hexenoic acid, 4-acyloxy-5-hexenoic acid and mixtures of same, to γ-vinyl-γ-butyrolactone which comprises reacting such acids under conditions suitable for elimination of the acyloxy moiety for a time sufficient to effect such conversion.

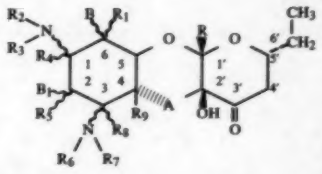
4,380,651

PROCESS FOR PREPARING 6'-METHYLSPECTINOMYCIN AND ANALOGS THEREOF

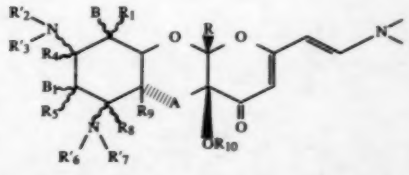
David R. White, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jul. 20, 1981, Ser. No. 285,164
Int. Cl.³ C07D *319/20, 327/06*
U.S. Cl. 549—361 **4 Claims**

1. A process for preparing a compound having the formula



which comprises reducing a compound having the formula



with hydrogen in the presence of a catalyst selected from the group consisting of palladium, barium sulfate, palladium hydroxide, and palladium/barium sulfate; wherein R is hydrogen or alkyl and R_1 through R_9 are selected from the group consisting of hydrogen, lower alkyl, lower alkenyl and lower alkynyl with the proviso that one of R_2 and R_3 is always hydrogen and one of R_6 and R_7 is always hydrogen, and B and B_1 are the same or different and are selected from the group consisting of hydrogen, hydroxy, alkoxy, o-lower alkenyl, thio, thio-lower alkyl and thio-lower alkenyl; and A is selected from the group consisting of oxygen and sulfur; R'_2, R'_3, R'_6 and R'_7 are se-

lected from the group consisting of lower alkyl, lower alkenyl, lower alkynyl, and a blocking group selected from the group consisting of aralkoxycarbonyl, halogenated-alkoxycarbonyl, with the proviso that one of R'_2 and R'_3 is always a blocking group and one of R'_6 and R'_7 is always a blocking group; and R_{10} is acyl.

4,380,652

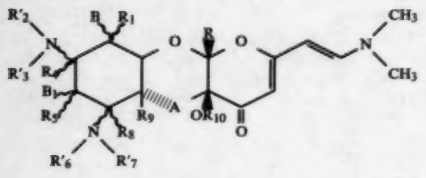
ENAMINES OF 6'-METHYLSPECTINOMYCIN AND PROCESS FOR PREPARING THE SAME

David R. White, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jul. 20, 1981, Ser. No. 285,165
Int. Cl.³ C07D *319/20, 327/06*
U.S. Cl. 549—361 **6 Claims**

1. A compound having the formula

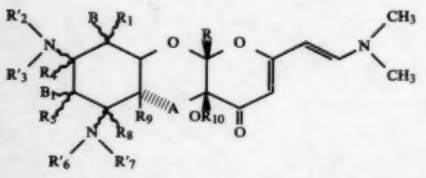
V



wherein R is hydrogen or alkyl and R_1, R_4, R_5, R_8, and R_9 are selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, and lower alkylyl; B and B_1 are the same or different and are selected from the group consisting of hydrogen, hydroxy, alkoxy, o-lower alkenyl, thio, thio-lower alkyl and thio-lower alkenyl; A is selected from the group consisting of oxygen and sulfur; R'_2, R'_3, R'_6 and R'_7 are selected from the group consisting of lower alkyl, lower alkenyl, lower alkynyl, and a blocking group selected from the group consisting of aralkoxycarbonyl, halogenated-alkoxycarbonyl and alkoxycarbonyl; with the proviso that one of R'_2 and R'_3 is always a blocking group, and that one of R'_6 and R'_7 is always a blocking group; and R_{10} is acyl.

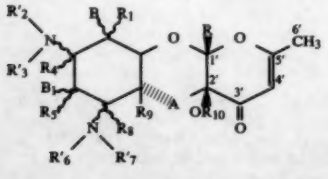
4. A process for preparing a compound having the formula

V



which comprises reacting a compound having the formula

VI



with, in an excess of an acetal of dimethylformamide wherein R is hydrogen or alkyl and R_1, R_4, R_5, R_8, and R_9 are selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, and lower alkynyl; B and B_1 are the same or different and are selected from the group consisting of hydrogen, hydroxy, alkoxy, o-lower alkenyl, thio, thio lower alkyl and thio-lower alkenyl; A is selected from the group consisting of oxygen and sulfur; R'_2, R'_3, R'_6 and R'_7 are selected from the group consisting of lower alkyl, lower alkenyl, lower alkynyl, and a blocking group selected from the group consisting of aralkoxycarbonyl, halogenated-alkoxycarbonyl and alkoxycarbonyl; with the proviso that one of R'_2 and R'_3 is always a blocking group, and that one of R'_6 and R'_7 is always a blocking group; and R_{10} is acyl.

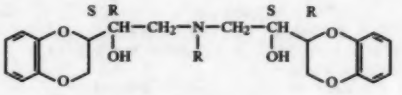
4,380,653

1,5-BIS-(1,4-BENZODIOXIN-2-YL)-3-AZAPENTANE-1,5-DIOLS

Charles F. Huebner, Chatham, and Heinz W. Gschwend, New Providence, both of N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 196,503, Oct. 14, 1980, Pat. No. 4,313,955. This application Sep. 8, 1981, Ser. No. 299,261
Int. Cl.³ A61K *31/335*
U.S. Cl. 549—366 **2 Claims**

1. A compound of the formula



(V)

wherein R is benzyl, an isomeric mixture of the erythro series containing said compound, or an acid addition salt thereof.

4,380,654

PROCESS FOR PREPARATION OF 2,3-DIHYDRO-2,2-DIMETHYL-7-HYDROXYBENZOFURAN

Borivoj R. Franko-Filipasic, Morrisville, Pa., and Philip B. Hobson, Trenton, N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Feb. 18, 1982, Ser. No. 349,804
Int. Cl.³ C07P *307/86*
U.S. Cl. 549—462 **7 Claims**

1. A process for thermally rearranging and cyclizing 2-methallyloxyphenol in the presence of a solvent to form 2,3-dihydro-2,2-dimethyl-7-hydroxybenzofuran which comprises heating 2-methallyloxyphenol in a pressurizable reactor at a temperature in the range of 150° C.–250° C. in the presence of a catalytic amount of Lewis acid catalyst selected from the group consisting of aluminum chloride, zinc chloride, mercuric chloride, hydrogen chloride, ferrous chloride, rhodium chloride, stannic chloride, magnesium chloride and ferric chloride, under an autogenous pressure in the range of 20 to 60 psig.

4,380,655

NOVEL SULFUR-CONTAINING FLAVORING AGENTS

Steven van den Bosch, Woudenberg; Dirk K. Kettenes, Putten; Kris Bart de Roos, Hoevelaken; Gerben Sipma, Hoevelaken, and Jan Stoffelsma, Hoevelaken, all of Netherlands, assignors to P.F.W. Beheer B.V., Amersfoort, Netherlands

Division of Ser. No. 762,534, Jan. 26, 1977, Pat. No. 4,119,737, which is a continuation of Ser. No. 531,274, Dec. 10, 1974, abandoned. This application May 22, 1978, Ser. No. 908,492
Claims priority, application United Kingdom, Dec. 13, 1973, 57908/73
Int. Cl.³ C07D *307/38;* **A23L** *2/26*
U.S. Cl. 549—472 **1 Claim**

1. 2-Methyl-3-(2'-methyl-2'-tetrahydrofurythio)-tetrahydrofuran.

4,380,656

2-VINYL- AND 2-ETHYLCYCLOPROPANE CARBOXYLATES

Richard G. Fayter, Jr., Fairfield, Ohio, assignor to Emery Industries, Inc., Cincinnati, Ohio

Filed Jul. 27, 1981, Ser. No. 287,395
Int. Cl.³ C07D 69/743, 69/747
U.S. Cl. 549—473 7 Claims

1. A compound of the formula

wherein R is an ethyl or vinyl group, R_1 and R_2 are hydrocarbon radicals containing from 1 to 30 carbon atoms and selected from the group consisting of aliphatic, cycloaliphatic and aromatic radicals, with the proviso that R_1 and R_2 cannot both be aliphatic hydrocarbon radicals.

4,380,657

CONVERSION OF ALKANOLS TO ETHERS

Lynn H. Slaugh, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 219,279, Dec. 22, 1980, Pat. No. 4,335,022, which is a continuation-in-part of Ser. No. 61,205, Jul. 27, 1979, abandoned. This application Mar. 5, 1982, Ser. No. 355,011
Int. Cl.³ C07D 307/08
U.S. Cl. 549—509 14 Claims

1. A process for converting alkanols to ethers which comprises contacting the alcohols at about 150° C. to about 550° C. with a catalyst prepared by a process which comprises impregnating a substantially dehydrated amorphorous silica gel with aluminum hydride dissolved in an anhydrous, nonhydroxyl containing organic solvent, drying the impregnated silica to remove the solvent and subsequently heating the impregnated silica at a temperature of about 300° to about 900° C. in a non-oxidizing atmosphere.

4,380,658

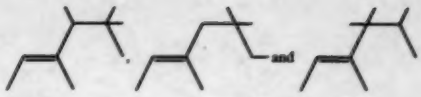
MIXTURE OF ALIPHATIC C_{10}-BRANCHED OLEFIN EPOXIDES AND USE THEREOF IN AUGMENTING OR ENHANCING THE AROMA OF PERFUMES AND/OR ARTICLES

Richard M. Boden, Monmouth Beach; Lambert Dekker, Wyckoff; Frederick L. Schmitt, Holmdel, all of N.J., and Augustinus G. Van Loveren, Rye, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

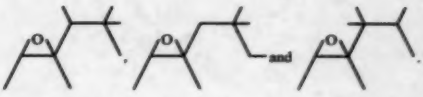
Division of Ser. No. 195,630, Oct. 9, 1980, Pat. No. 4,335,009, which is a continuation-in-part of Ser. No. 160,788, Jun. 19, 1980, Pat. No. 4,287,084. This application Feb. 18, 1982, Ser. No. 350,093
Int. Cl.³ C07D 301/14, 303/04
U.S. Cl. 549—525 1 Claim

1. A product produced according to the process comprising the steps of reacting isoamylene having the structure:

with a Lewis acid or a mineral acid to form a mixture of di-isoamylenes having the structures:



and then reacting the said mixture of di-isoamylenes with a peracid in order to form a mixture of epoxides having the structures:



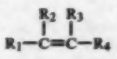
4,380,659

OLEFIN OXIDATION WITH METHYL FORMATE SOLVENT

Paul W. Solomon, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 12, 1979, Ser. No. 3,064
Int. Cl.³ C07D 301/06
U.S. Cl. 549—532 3 Claims

1. A method for oxidizing an olefin containing from 3 up to about 18 carbon atoms per molecule which is represented by the formula



wherein each R_1, R_2, R_3, and R_4 is independently selected from a group consisting of hydrogen, alkyl, and cycloalkyl radicals and wherein there is at least one hydrogen attached to a carbon atom adjacent to the olefinic group said method comprising contacting said olefin with molecular oxygen in a liquid reaction medium consisting essentially of said olefin and methyl formate said methyl formate present in the reaction medium in a minimum amount of about 80 weight percent.

4,380,660

PRODUCING ALKOXYSILANES AND ALKOXY-OXIMINOSILANES

Chempolil T. Mathew, Randolph, and Harry E. Ulmer, Morristown, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

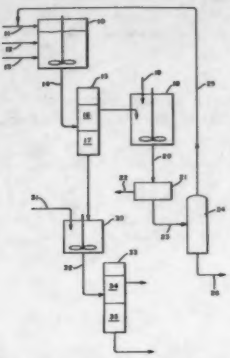
Filed Jul. 1, 1982, Ser. No. 394,353
Int. Cl.³ C07F 7/10, 7/18
U.S. Cl. 556—422 20 Claims

1. A method for the production of an alkoxysilane which comprises:

(a) reacting a silicon halide of the formula $R_{4-n}SiX_n$, wherein n is an integer between 1 and 4, inclusive, and R is alkyl of 1–6 carbons, alkenyl of 2–6 carbons, cycloalkyl of 4–8 carbons, aryl, alkyl-substituted aryl, aralkyl or halosubstituted forms of any of these with an alcohol of the formula R'OH, with R' being alkyl of 1–24 carbons or aralkyl, in the presence of an oxime compound of the formula R"R'"C=NOH, with R" and R'" each being hydrogen or alkyl of 1–6 carbons or forming an unsubstituted, halosubstituted or alkylsubstituted cycloalkyl ring of 4–8 carbons, and X is Cl, Br or I;

the molar ratio of alcohol to silicon halide being at least n:1

and the molar ratio of oxime to silicon halide being at least n:1; and



(b) recovering the alkoxysilane of the formula $R_{4-n}Si(OR')_n$ as major product and the hydrohalide of said oxime as byproduct.

4,380,661

2-[4-(4-SUBSTITUTED PHENOXY)PHENOXY]PROPANOIC ACIDS AND ESTERS

Milos Suchy, Pfaffhausen, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

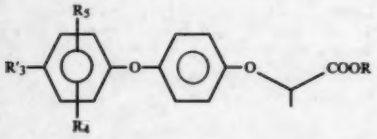
Continuation of Ser. No. 89,791, Oct. 31, 1979, abandoned, which is a division of Ser. No. 962,087, Nov. 20, 1978, Pat. No. 4,200,587. This application Feb. 23, 1981, Ser. No. 237,196

Claims priority, application Luxembourg, Nov. 28, 1977, 78591; Switzerland, Sep. 15, 1978, 9667/78

Int. Cl.³ C07C *69/712, 59/68*

U.S. Cl. 560—62 **5 Claims**

1. An optically active compound of the D-configuration having the formula



wherein R is hydrogen or alkyl of from 1 to 6 carbons, R'_3 is bromine or trifluoromethyl and R_4 and R_5 are hydrogen with the proviso that R is alkyl of from 1 to 6 carbons when R'_3 is trifluoromethyl.

4,380,662

PROCESS FOR THE PURIFICATION OF TEREPHTHALIC ACID

Jacques D. V. Hanotier, Lasne Chapelle St. Lambert, and Jacques F. Dauby, Groot-Bijgaarden, both of Belgium, assignors to Labofina, S.A., Brussels, Belgium

Filed Mar. 16, 1981, Ser. No. 243,703

Int. Cl.³ C07C *51/42*

U.S. Cl. 562—486 **11 Claims**

1. A process for the purification to fiber-grade quality of a crude terephthalic acid product contaminated with up to 10% by weight of partially oxidized impurities including p-toluic acid and an amount of 4-carboxybenzaldehyde which is higher than the amount permissible for fiber grade terephthalic acid, comprising the steps of:

(a) dissolving the crude product in water by heating up to a temperature at least about 5° C. higher than necessary for having the resulting solution saturated with terephthalic acid;

(b) cooling the resulting solution down to a temperature greater than 185° C. to precipitate purified crystals;

(c) recovering the purified crystals by solid-liquid separation at a temperature not lower than that used for the precipitation of the purified crystals; and

(d) washing the recovered crystals by contacting with water at a temperature which is at least as high as the temperature of the recovery step.

4,380,663

PROCESS FOR THE PREPARATION OF PRACTICALLY FORMIC ACID-FREE ACETIC ACID

Günter Roscher, Kelkheim; Helmut Schaum, Bad Soden am Taunus, and Heinz Schmitz, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 670,412, Mar. 25, 1976, abandoned. This application Oct. 20, 1977, Ser. No. 844,048

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1975, 2513678; Dec. 18, 1975, 2557004

Int. Cl.³ C07C *51/235, 53/08*

U.S. Cl. 562—536 **7 Claims**

1. In a process for the preparation of acetic acid substantially free of formic acid by oxidation of acetaldehyde with oxygen in the liquid phase in the presence of a catalyst at a temperature of from 40° C. to 120° C., the improvement which comprises oxidizing liquid acetaldehyde in the presence of a catalytic mixture of cobalt, nickel, and manganese compounds, one of said compounds being present in an amount up to five times the sum of the amounts of the other compounds.

4,380,664

PROCESS FOR PRODUCING UNSATURATED ALDEHYDES, AND UNSATURATED FATTY ACIDS

Hiromichi Ishii; Hideo Matsuzawa; Masao Kobayashi, all of Ohtake, and Kantaro Yamada, Yokohama, all of Japan, assignors to Mitsubishi Rayon Company, Ltd., Tokyo, Japan

Division of Ser. No. 667,371, Mar. 16, 1976, Pat. No. 4,111,984, which is a continuation-in-part of Ser. No. 474,218, May 29, 1974, Pat. No. 3,972,920. This application Mar. 29, 1978, Ser. No. 891,222

Claims priority, application Japan, Jun. 11, 1973, 48-65563; Aug. 28, 1973, 48-96345; Dec. 18, 1973, 48-142118; Dec. 26, 1973, 49-144000

Int. Cl.³ C07C *45/35, 47/22, 51/25, 57/05*

U.S. Cl. 562—546 **9 Claims**

1. In a process for the gas phase catalytic oxidation of at least one olefinic hydrocarbon of 3 to 4 carbon atoms in the presence of molecular oxygen at 200° to 450° C. to produce mixtures of the corresponding aldehyde and acid, the improvement comprising: oxidizing said compound over a calcined catalyst consisting essentially of $Mo_aSb_bBi_cFe_dNi_eSn_fX_gY_hO_i$ wherein X is at least one alkali metal selected from the group consisting of potassium, rubidium and cesium; Y is at least one metal selected from the group consisting of cobalt, uranium, germanium, tungsten and titanium; a to h are atomic ratios wherein a=12, b=0.2 to 20, c=0.2 to 12, d=0.2 to 12, e=0.2 to 12, f=0 to 20, g=0.01 to 4 and h=0 to 6; and i is determined according to the oxidation states of the metal atoms in the catalyst.

4,380,665

METHYL ISOCYANATE EMISSION CONTROL

John W. Ager, Princeton, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Sep. 8, 1981, Ser. No. 299,892

Int. Cl.³ C07C *127/15*

U.S. Cl. 564—61 **2 Claims**

1. A process for removing methyl isocyanate from a gaseous

effluent stream comprising contacting the gaseous effluent stream with alumina for a period sufficient to hydrolyze the methyl isocyanate to 1,3-dimethylurea.

4,380,666

COLOR-FORMING SULFONAMIDODIPHENYLAMINE DYE PRECURSOR THAT PRODUCES PHENAZINE DYE

Rolf S. Gabrielsen, Webster; Patricia A. Graham, Williamson, and James E. Kljanowicz, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 6, 1981, Ser. No. 280,628
Int. Cl.³ C07C *143/75*
U.S. Cl. 564—82 9 Claims

1. A color-forming para-sulfonamidodiphenylamine dye precursor having one or two sulfonamido groups in positions ortho to the amine —NH— moiety separating the two phenyl rings of the para-sulfonamidodiphenylamine, the remaining two or three ortho positions of the sulfonamidodiphenylamine being unsubstituted, and wherein the parasulfonamidodiphenylamine, in oxidized form, intramolecularly reacts to produce a sulfonamido substituted phenazine dye.

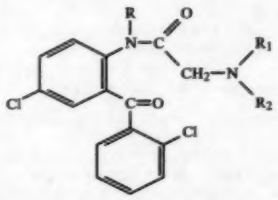
4,380,667

2'-(ORTHOCHLOROBENZOYL)-4'-CHLORO-GLYCYLANILIDES, COMPOSITIONS THEREOF, AND USE AS MEDICAMENTS

Gilbert Mouzin; Henri Cousse, and Antoine Stenger, all of Castres, France, assignors to Pierre Fabre S.A., Paris, France

Filed Sep. 19, 1979, Ser. No. 76,841
Claims priority, application France, Sep. 25, 1978, 78 27401
Int. Cl.³ C07C *103/50*
U.S. Cl. 564—195 3 Claims

1. 2'-(ortho-chlorobenzoyl)-4'-chloroglycylanilides selected from compounds having the formula I:



(I)

in which:

R represents hydrogen or lower-alkyl;

R_1 and R_2 are lower-hydroxyalkyl,

and pharmaceutically acceptable inorganic or organic acid addition salts thereof.

4,380,668

DECAPRENYLAMINE DERIVATIVES

Yoshiyuki Tahara, Ohi; Hiroyasu Koyama, Ageo; Yasuhiro Komatsu, Niiza; Reiko Kubota, Tokyo, and Toshihiro Takahashi, Ohi, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

Filed Nov. 19, 1980, Ser. No. 208,324
The portion of the term of this patent subsequent to Mar. 30, 1999, has been disclaimed.
Int. Cl.³ C07C *87/28*; A61K *31/13*; C07D *213/06*; A61K *31/44*
U.S. Cl. 564—391 3 Claims

1.

wherein n represents an integer of 0–2, R_1 represents hydrogen atom, a lower alkyl group or decaprenyl group, and R_2 represents the phenyl group, and pharmaceutically acceptable acid addition salts thereof.

4,380,669

PROCESS FOR SYNTHESIZING ANILINE

Clarence D. Chang, Princeton, and William H. Lang, Pennington, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 8, 1981, Ser. No. 252,487
Int. Cl.³ C07C *85/06*
U.S. Cl. 564—402 8 Claims

1. A process for converting phenol or phenolic type compounds to aniline or substituted anilines comprising contacting said phenol or phenolic compound with ammonia or a suitable amine under conversion conditions in the presence of a crystalline alumino silicate zeolite having a constraint index within the approximate range of 1–12 and a silica to alumina ratio of at least 12.

4,380,670

PROCESS FOR PRODUCING 1,3,5-TRIAMINOBENZENE

Ryuzo Nishiyama, Takatsuki; Kanichi Fujikawa, Moriyama; Isao Yokomichi, Moriyama; Itaru Shigehara, Moriyama, and Mikio Miyaji, Shiga, all of Japan, assignors to Ishihara Sangyo Kaisha Ltd., Osaka, Japan

Filed Apr. 3, 1981, Ser. No. 250,552
Int. Cl.³ C07C *85/04*
U.S. Cl. 564—407 7 Claims

1. A process for producing an aminobenzene comprising reacting ammonia at substantially higher than atmospheric pressure with 3,5-diaminochlorobenzene to produce 1,3,5-triaminobenzene at a temperature of 150° to 250° C. at a molar ratio of ammonia to 3,5-diaminochlorobenzene of 2 to 10 in the presence of a copper compound catalyst selected from the group consisting of copper salt, copper oxide, and copper hydroxide.

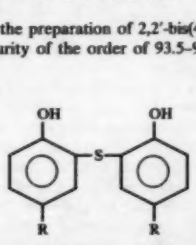
4,380,671

PROCESS FOR THE PREPARATION OF 2,2'-BIS(4-SUBSTITUTED PHENOL)SULFIDES

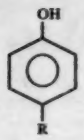
Akihiro Yamaguchi, Kamakura; Tadashi Kobayashi, Yokohama; Keizaburo Yamaguchi, Kawasaki, and Hisamichi Murakami, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Japan

Continuation of Ser. No. 75,263, Sep. 13, 1979, abandoned. This application Jul. 30, 1981, Ser. No. 288,428
Claims priority, application Japan, Sep. 14, 1978, 53/112270; Aug. 2, 1979, 54/98054
Int. Cl.³ C07C *149/36*
U.S. Cl. 568—48 14 Claims

1. Process for the preparation of 2,2'-bis(4-substituted phenol)sulfides of purity of the order of 93.5–98.5% and of the general formula



where R is an alkyl radical having from 1 to 12 carbon atoms, a cycloalkyl radical having from 3 to 12 carbon atoms, or an aralkyl radical having from 7 to 11 carbon atoms, which comprises the step of reacting a 4-substituted phenol of the general formula



where R is the same as above, with sulfur dichloride in a molar ratio of 2 moles of phenol per 0.8–1.5 moles of sulfur dichloride in a hydrocarbon solvent or a halogenated hydrocarbon solvent at a temperature of from −10° to 40° C. and in the presence of a Lewis acid catalyst.

4,380,672

CONVERSION OF 2-PHENYL PROPANAL TO 2-INDANONE

Louis J. Velenyi, Lyndhurst, and Andrew S. Krupa, Twinsburg, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 182,282, Aug. 28, 1980, Pat. No. 4,329,506. This application Feb. 2, 1982, Ser. No. 345,264

Int. Cl.³ C07C *45/67*

U.S. Cl. 568—310 **5 Claims**

1. A process of converting 2-phenyl propanal to 2-indanone, the process comprising contacting at conversion conditions 2-phenyl propanal with a catalyst of the formula

$$Mo_{12}Cu_{0.1\text{-}10}V_{0.1\text{-}5}W_{0.1\text{-}3}M_{0.3}O_x \quad (I)$$

where

M is at least one of tin, lead, chromium, gold, silver, selenium, antimony, bismuth, phosphorus, arsenic, cerium, tellurium, thorium, uranium and a Group IA, IIA, IIB, IVB or VIII element, and

x is the number of oxygen atoms determined by the valence requirements of the other elements present.

4,380,673

CATALYST AND PROCESS FOR MANUFACTURING A KETONE BY DEHYDROGENATION OF A SECONDARY ALCOHOL

Jean-Paul Bournonville, Chatou; Roger Snappe, Sevres; Jean Miquel, Paris, and Germain Martino, Poissy, all of France, assignors to Institut Francais Du Petrole, Rueil-Malmaison, France

Filed Jun. 26, 1981, Ser. No. 277,581

Claims priority, application France, Jun. 26, 1980, 80 14290; Jan. 19, 1981, 81 01018

Int. Cl.³ C07C *45/00*

U.S. Cl. 568—361 **17 Claims**

1. In a process comprising contacting a secondary alcohol, in the liquid phase and in the presence of a solvent, with a dehydrogenation catalyst, and recovering the resultant ketone,

the improvement wherein said catalyst consists essentially of a Raney nickel catalyst and 0.1–10% by weight, expressed as elemental metal and with respect to the Raney nickel, of at least one additional metal, said additional metal being copper, silver, gold, tin, lead, zinc, cadmium, indium or germanium; wherein the reaction is effected at a temperature of about 170°–230° C.; and wherein said solvent is a $C_{12\text{-}20}$ paraffinic hydrocarbon or hydrocarbon cut having a content of aromatic hydrocarbons and aromatic hydrocarbon generators, expressed as benzene, lower than 1,000 ppm and a sulfur content lower than 500 ppm; whereby hydrogenolysis to produce degradation products is reduced and the selectivity of the dehydrogenation is increased.

4,380,674

BRANCHED KETONES, ORGANOLEPTIC USES THEREOF AND PROCESS FOR PREPARING SAME

Richard M. Boden, Monmouth Beach, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

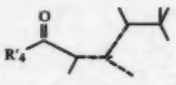
Continuation-in-part of Ser. No. 184,132, Sep. 4, 1980, Pat. No. 4,321,255. This application Nov. 5, 1981, Ser. No. 318,428

The portion of the term of this patent subsequent to Aug. 24, 1999, has been disclaimed.

Int. Cl.³ C07C *49/203*

U.S. Cl. 568—417 **13 Claims**

1. An unsaturated branched-chain ketone defined according to the structure:



wherein R_4' represents C_1–C_4 lower alkyl, and one of the dashed lines represents a carbon-carbon double bond and the other of the dashed lines represent carbon-carbon single bonds.

4,380,675

2,4-DIALKYL-2,6-HEPTADIENAL DERIVATIVES, A PROCESS FOR THEIR PREPARATION, AND FRAGRANT AND FLAVORING PRODUCTS MADE THEREWITH

Helmut Gebauer, Munich, and Walter Hafner, Furth, both of Fed. Rep. of Germany, assignors to Consortium fur Elektrochemische Industrie GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 2, 1981, Ser. No. 230,778

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1980, 3013672

Int. Cl.³ C07C *47/21*

U.S. Cl. 568—448 **3 Claims**

1. A compound selected from the group consisting 2,4-dimethyl-2,6-heptadienal; 2,4-diethyl-2,6-heptadienal; 2,4-di-n-propyl-2,6-heptadienal; 2,4-di-iso-propyl-2,6-heptadienal; 2,4-dimethyl-2,6-heptadienol; and 2,4-diethyl-heptanol.

4,380,676

PROCESS FOR THE PRODUCTION OF 2,2'-DIHYDROXY-BIPHENYLS

Michael Rasberger, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

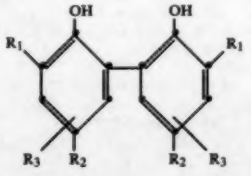
Filed Feb. 20, 1981, Ser. No. 236,467

Claims priority, application Switzerland, Feb. 29, 1980, 1625/80

Int. Cl.³ C07C *39/12, 39/15*

U.S. Cl. 568—730 **11 Claims**

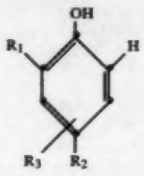
1. A process for the production of a 2,2'-dihydroxybiphenyl of the formula I



(I)

wherein each of R_1 and R_2 independently is hydrogen, C_1–$C_1$₈alkyl, C_2–C_6alkenyl, or C_5–C_7cycloalkyl, phenyl or C_7–C_9-phenylalkyl, each of which is unsubstituted or substituted by one to three C_1–C_4alkyl radicals, or R_1 and R_3 together are a butadi-1,3-enyl-1,4-ene radical-which is bonded to the benzene ring in the 3,4 and 3', 4'-positions, and R_2 is also a $-(CH_2)_n COOR_4$ group, wherein R_4 is C_1–C_{18}alkyl and n is 0, 1 or 2,

and R_3 is hydrogen or C_1–C_{18}alkyl, with the proviso that when R_1 is hydrogen, R_2 and R_3 are a 1,1,3,3-tetramethylpropylene radical which is bonded to the benzene ring in the 4,5- and 4',5'-positions, which process comprises oxidatively coupling, at elevated temperatures, a phenol of the formula II



(II)

wherein R_1, R_2 and R_3 are as defined above, with hydrogen peroxide in the presence of a strong inorganic base.

4,380,677

PREPARATION OF 2,6-DI-TERT-BUTYL-4-ALKYLPHENOLS

Paul R. Kurek, Schaumburg, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed May 11, 1981, Ser. No. 262,366
Int. Cl.³ C07C *39/06, 37/11*
U.S. Cl. 568—788 **7 Claims**

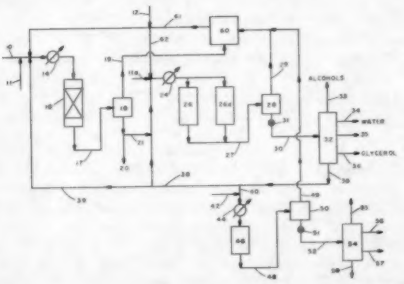
1. A method of preparing a 2,6-di-tert-butyl-4-alkylphenol comprising reacting a 4-alkylphenol with from about 3 to about 10 molar proportions of 2-methylpropene at a temperature from about 50° to about 125° C. in the presence of a macroreticular cation exchange resin bearing sulfonic acid groups, said resin having an internal surface area from about 200 to about 600 m^2/g with an average pore diameter from about 30 to about 120 Angstroms, and recovering the 2,6-di-tert-butyl-4-alkylphenol produced thereby.

4,380,678

MULTI-STAGE ALDOSES TO POLYOLS PROCESS

Amalesh K. Sirkar, Lawrenceville, N.J., assignor to Hydrocarbon Research, Inc., Lawrenceville, N.J.

Filed Mar. 20, 1981, Ser. No. 226,998
Int. Cl.³ C07C *31/18, 31/20, 31/22, 31/26*
U.S. Cl. 568—863 **10 Claims**



1. A process for catalytic conversion of monosaccharides to produce polyols, comprising the steps of:

(a) providing a feedstream containing at least about 20 W % monosaccharide solution and having pH of 7 to 14;

(b) preheating the feed and hydrogen gas to at least about 100° C., and passing the heated feedstream mixture through a first stage fixed bed catalytic reaction zone containing a stabilized high activity nickel on silica-alumina support containing 50–60 W % porous nickel and having 0.060–0.250 inch diameter particle size and surface area of 140–180 M^2/gm;

(c) maintaining said first reaction zone at conditions of 130°–180° C. temperature, 500–2000 psig partial pressure of hydrogen, and 0.5–3.5 V.Hr/V space velocity, for achieving at least about 90 W % conversion of the feed to alditols;

(d) withdrawing product containing alditol solution and passing it with a promotor material and hydrogen gas to a second-stage fixed-bed reaction zone containing a particulate high activity stabilized metal catalyst which catalyst comprises 50–65 W % porous nickel on an inert support, has 4–12 mesh (0.187–0.66 inch) particle size (U.S. Sieve Series), and a catalyst age of 8–200 hours before regeneration to maintan its activity;

(e) maintaining said second reaction zone conditions within the range of 430°–490° F. temperature, 1200–2000 psig hydrogen partial pressure, and 1.5–3.0 liquid hourly space velocity (LHSV) for achieving at least about 30 W % conversion of the alditol to products;

(f) withdrawing from the second reaction zone a product stream in which the alditol is converted between about 30 to 80 W % to yield glycerol and glycol products, and passing the polyol-containing stream to a recovery step from which mainly glycerol product is withdrawn;

(g) recycling a heavy purge stream containing aldose and alditols diluted with alcohol and/or water to the first stage reaction zone for further conversion to alditols and glycerols, respectively.

4,380,679

HYDROGENATION OF SACCHARIDES

Blaise J. Arena, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Apr. 12, 1982, Ser. No. 367,494
Int. Cl.³ C07C *31/26*
U.S. Cl. 568—863 **13 Claims**

1. A process for the hydrogenation of a saccharide which comprises treating said saccharide with hydrogen at hydrogenation conditions in the presence of a catalyst comprising a metal of Group VIII of the Periodic Table composited on a support comprising a carbonaceous pyropolymer possessing recurring units containing at least carbon and hydrogen atoms, and recovering the resultant hydrogenated saccharide.

4,380,680

METHOD FOR HYDROGENATING AQUEOUS SOLUTIONS OF CARBOHYDRATES

Blaise J. Arena, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

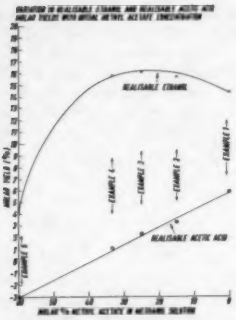
Filed May 21, 1982, Ser. No. 380,809
Int. Cl.³ C07C *31/26, 31/24, 31/18*
U.S. Cl. 568—863 **11 Claims**

1. A method for the hydrogenation of a carbohydrate to its polyol(s) comprising contacting at hydrogenating conditions an aqueous solution of the carbohydrate with hydrogen and a catalyst consisting essentially of a zerovalent Group VIII metal selected from the group consisting of osmium, ruthenium, palladium and platinum dispersed on alpha-alumina, and recovering the formed polyol(s).

4,380,681
HYDROCARBONYLATION OF METHANOL TO ETHANOL IN THE PRESENCE OF ADDED COMPOUNDS

John L. Barclay, Tadworth, and Brian R. Gane, Weybridge, both of England, assignors to The British Petroleum Company Limited, London, England

Continuation of Ser. No. 52,006, Jun. 25, 1979, abandoned, which is a continuation of Ser. No. 908,060, May 22, 1978, abandoned. This application Nov. 26, 1980, Ser. No. 210,547
Claims priority, application United Kingdom, May 27, 1977, 22490/77
Int. Cl.³ C07C *29/00*
U.S. Cl. 568—902 23 Claims



1. A process for the production of ethanol which process comprises contacting a mixture of methanol and synthesis gas at elevated temperature and pressure with a cobalt-containing catalyst in the presence of an additive which is deliberately added to the reaction system, said additive being selected from the group consisting of monocarboxylic acids and derivatives thereof having the formula

(I)

wherein the substituent R is selected from hydrocarbyl groups and oxygen-containing hydrocarbyl groups and the substituent X is selected from the groups —OR^1 and —O—CO—R^2 in which R^1 is selected from the group consisting of a hydrogen atom, a hydrocarbyl group and an oxygen-containing hydrocarbyl group and R^2 is selected from the group consisting of a hydrocarbyl group and an oxygen-containing hydrocarbyl group, said additive of formula I being added in an amount such that the molar ratio of additive to free methanol contacted with the catalyst is in the range of from 0.1:1 to 1.5:1, provided that when R and R^1 are both methyl then the molar ratio of additive to free methanol contacted with the catalyst is in the range of from about 0.1:1 to 0.7:1.

4,380,682
BALANCED CHLORINATION PROCESS

Frederick C. Leitert, North Madison, and Carl G. Vinson, Jr., Mentor, both of Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Continuation of Ser. No. 782,974, Mar. 30, 1977, which is a continuation-in-part of Ser. No. 734,249, Oct. 20, 1976, Pat. No. 4,124,534. This application Feb. 22, 1982, Ser. No. 351,219
The portion of the term of this patent subsequent to Nov. 7, 1995, has been disclaimed.
Int. Cl.³ C07C *17/152*
U.S. Cl. 570—219 6 Claims

1. A process of halogenating aliphatic hydrocarbons which comprises the steps of:

(a) non-selectively oxyhalogenating an aliphatic hydrocarbon to a partially halogenated intermediate product having an overall average empirical formula using as the halogen source a member from the group consisting of chlorine, hydrogen cloride, and mixtures of chlorine and hydrogen chloride, the atomic ratio of halogen to carbon in said empirical formula being greater than 1:1, said oxyhalogenation being carried out in a fluid bed reactor containing a catalyst consisting essentially of cupric chloride modified with a modifying metal chloride selected from the group consisting of potassium chloride, calcium chloride and barium chloride and impregnated onto an alumina support, said alumina support having an alumina content of from about 98% to about 99.5% by weight, a sodium oxide content of from about 0.5% to about 1%, a silica content less than 0.5%, an average particle size of from about 90 to about 120 microns, and an average surface area from about 2 to about 5 m^2/gm; the total loading of catalyst salts being in the range of from about 5% to about 8% by weight and the atomic ratio of the metal of said modifying metal chloride to copper being in the range of from about 0.5:1 to about 1.2:1 and the reaction conditions in said reactor including a temperature of from about 340° C. to about 450° C., a pressure of 0 to about 200 psi gauge, and a contact time of from about 1 to about 30 seconds;

(b) adjusting said reaction conditions to control the halogen to carbon ratio of said empirical formula of said intermediate product;

(c) further halogenating said intermediate product by reacting it with halogen gas in the absence of oxygen at 400° C. to 500° C., and in the presence of silica-alimina catalyst to form an end-product having an atomic ratio of carbon to hydrogen of at least 2:1; and

(d) adjusting the halogen to carbon ratio of said empirical formula of said intermediate product so as to control the quantity of hydrogen halide by-product formed in said further halogenation reaction.

4,380,683
HYDROALKYLATION OF BENZENE AND ANALOGS

Serge R. Dolhyj, Parma, and Louis J. Velenyi, Lyndhurst, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 916,683, Jun. 19, 1978, abandoned, which is a continuation of Ser. No. 752,038, Dec. 20, 1976, abandoned. This application Dec. 22, 1981, Ser. No. 333,351
Int. Cl.³ C07C *15/00*
U.S. Cl. 585—268 14 Claims

1. A process for the hydroalkylation of mononuclear aromatic hydrocarbons comprising contacting a mononuclear aromatic hydrocarbon and hydrogen with a catalyst comprising a rare earth-exchange Y-type zeolite support carrying a promoter comprising at least one of ruthenium, iridium, rhodium and palladium, said catalyst having been calcined in a molecular oxygen-containing atmosphere at a temperature of about 250° to 600° C. prior to use.

4,380,684

LINEAR ALPHA OLEFIN PRODUCTION USING A TANK GROWTH REACTOR

Allan E. Fowler; Gordon E. White, both of Lake Jackson, and Steve A. Sims, Angleton, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 269,119, Jun. 1, 1981, abandoned. This application Apr. 19, 1982, Ser. No. 369,458

Int. Cl.³ C07C 2/88, 3/10

U.S. Cl. 585—328 14 Claims

1. In a process for making C_4–C_{10} α-olefins wherein an α-olefin having 2–4 carbon atoms or mixtures thereof and low molecular weight trialkyl aluminum are reacted in a growth reaction zone under growth promoting conditions to provide higher molecular weight trialkyl aluminum and reacting an α-olefin having 2–4 carbon atoms or mixtures thereof with said higher trialkyl aluminum in a displacement reactor zone under displacement conditions to provide a mixture of C_4–C_{10} α-olefins, the improvement which comprises providing a growth reaction zone by reacting 2 to 6 moles of α-olefin per mole of trialkyl aluminum in a tank reaction zone and having a recirculation rate through an external heat transfer zone such that the reaction zone contents are completely recirculated in a period of time sufficient to remove the heat of said reaction zone so as to maintain a substantially constant temperature therein.

4,380,685

SHAPE SELECTIVE REACTIONS WITH ZEOLITE CATALYSTS MODIFIED WITH IRON AND/OR COBALT

Chin-Chiun Chu, North Brunswick, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 150,868, May 19, 1980, abandoned. This application Nov. 4, 1981, Ser. No. 318,238

Int. Cl.³ C07C 2/68

U.S. Cl. 585—466 12 Claims

1. A process for para-selective alkylation, transalkylation or disproportionation of a substituted aromatic compound to form a dialkylbenzene compound mixture rich in the 1,4-dialkylbenzene isomer, said process comprising contacting said aromatic compound with a crystalline zeolite catalyst composition at a temperature of between about 250° C. and about 750° C. and a pressure within the approximate range of 10^5 N/m^2 to 10^7 N/m^2, said catalyst comprising a zeolite characterized by a silica to alumina mole ratio of at least 12 and a constraint index within the approximate range of 1 to 12, said catalyst having incorporated thereon at least about 0.25 percent by weight of a metal selected from iron, cobalt and combinations thereof, and at least about 0.25 weight percent of the element phosphorus, said metal and said phorphorus both being present in said catalyst in the form of their oxides.

4,380,686

CABLE SLEEVE LINER

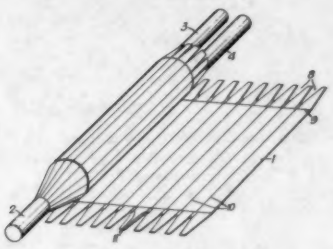
Marc F. L. Moisson, Strombeek, Belgium, assignor to N.V. Raychem S.A., Kessel-lo, Belgium

Filed Nov. 16, 1979, Ser. No. 94,815

Claims priority, application United Kingdom, Sep. 11, 1979, 7931402

Int. Cl.³ H01R 4/70; H02G 15/18

U.S. Cl. 174—84 R 9 Claims



1. A cable splice case comprising a cable sleeve liner wrapped around a cable splice and a sleeve surrounding the wrapped liner, said cable sleeve liner comprising a laminate having at least one layer of a fibrous non-woven cellulosic sheet material between a metal layer which is substantially impermeable to moisture vapour, said metal layer having one of its major surfaces facing away from all fibrous sheet layers present in the liner, and a microperforated first layer of flexible polyester film material which is vapour-permeable to permit escape of gases or vapours generated within the laminate during recovery of the sleeve.

4,380,687

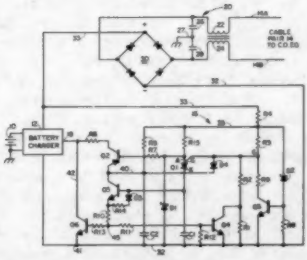
POWER SUPPLY CONTROL CIRCUIT FOR SUBSCRIBER CARRIER TELEPHONE SYSTEM

James A. Stewart, Redwood City, Calif., assignor to GTE Automatic Electric Laboratories, Inc., Northlake, Ill.

Filed Mar. 27, 1981, Ser. No. 248,129

Int. Cl.³ H04M 19/06

U.S. Cl. 179—2 BC 9 Claims



1. Apparatus responsive to prescribed voltage conditions, such as a high voltage that is greater than a first threshold level and a low voltage that is less than a second threshold level, on the pair of wires of a cable pair for rendering a carrier subscriber local battery charging circuit inoperative for at least a prescribed time interval, operation of the charging circuit connecting it through the cable pair to a central office power source from which it draws current for charging the local battery, said apparatus comprising:

first and second lines adapted for electrical connection to one and other of the cable pair wires;

a storage capacitor having one and other terminals electrically connected to said first and second lines, respectively, said storage capacitor being charged with line current on the cable pair that is drawn from the central office power source;

a timing capacitor having a first terminal electrically connected to said first line and having an other terminal;

programmable unijunction transistor (PUT) means having cathode, gate and anode electrodes, said cathode being electrically connected to the other terminal of said timing capacitor;

first bipolar transistor means having its primary conduction path electrically connected between the other terminal of said storage capacitor and the charging circuit for selectively providing startup current for an active element of the latter and having a base electrode electrically connected to said PUT means anode, non-conduction of said first transistor means making said startup current available for charging said storage capacitor;

first means responsive to both high voltage and low voltage conditions on the cable pair that exceed and fall below the first and second threshold levels for producing a voltage change on said PUT means gate that makes it sufficiently negative with respect to the voltage on said PUT means anode to cause said PUT means to conduct and discharge said storage capacitor into said timing capacitor; and

second means responsive to a charge voltage on said timing capacitor for holding the charging circuit inoperative for at least the prescribed time interval during discharge of said timing capacitor following conduction of said PUT means.

4,380,688

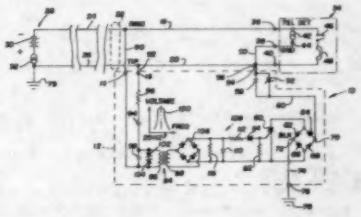
TELEPHONE RINGING RANGE EXTENDER

Frank L. Simokat, Broken Arrow, Okla., assignor to TII Industries Inc., Copiague, N.Y.

Filed Jul. 13, 1981, Ser. No. 283,114

Int. Cl.³ H04M 19/00

U.S. Cl. 179—84 R 11 Claims



1. A ringing range extender for single party telephone service on long rural line loops wherein the ringer and a blocking capacitor of a subscriber's telephone instrument has been connected across the tip and ring electrical conductors of said loop comprising, in combination:

(a) first and second terminals adapted to be DC coupled to said tip and ring conductors of said subscriber's line connecting said subscriber's telephone instrument to a central office to provide for the application of the central office battery and AC ringing signal voltages across said terminals;

(b) semiconductor, breakover means;

(c) capacitor means, connected in parallel with said semiconductor breakover means, one end of said capacitor means being connected to one of said subscriber loop conductors;

(d) switching means, said switching means being connected between a ground reference and the other end of said capacitor means for providing a relatively low impedance DC series current path from said one of the subscriber loop conductors through said semiconductor breakover means to said ground reference upon activation of said

switching means, said switching means providing a relatively high impedance when de-activated; and

(e) circuit means responsive to the application of a ringing signal voltage from the other of said subscriber loop conductors to said reference ground for providing an activating voltage to said switching means.

4,380,689

ELECTROACOUSTIC TRANSDUCER FOR HEARING AIDS

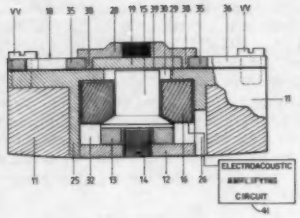
Vittorio Giannetti, Via di Vigna Murata 202, 00143 Roma, Italy

Filed Jul. 15, 1980, Ser. No. 169,096

Claims priority, application Italy, Aug. 1, 1979, 49930 A/79

Int. Cl.³ H04R *11/00*

U.S. Cl. 179—114 R **12 Claims**



1. An electroacoustic transducer comprising:

(a) a main support having a hollow cylindrical body defining a bore, and a central opening communicating with said bore;

(b) a body defining a central bore and attached to said main support such that said central bore is disposed about said cylindrical body;

(c) a closure disc attached to said cylindrical body across said bore;

(d) an annular, flat permanent magnet located on said closure disc within said bore;

(e) a magnetizable core attached to, and aligned with said permanent magnet;

(f) an electrical winding or coil disposed around said magnetizable core and located between said core and said cylindrical body, said winding or coil being electrically connected to an electroacoustic amplifying circuit;

(g) a vibrating disc;

(h) means attaching said vibrating disc across said central opening in the main support such that it is in close proximity to an end of said magnetizable core; and

(i) means to adjustably modify the magnetic flux of said annular, flat permanent magnet.

4,380,690

HYBRID CIRCUIT

Teruo Matsufuji, Koganei; Akira Hirato, Ebina, and Yoshihiro Kawada, Hitaka, all of Japan, assignors to Iwasaki Tsushinki Kabushiki Kaisha, Japan

Filed Jun. 29, 1981, Ser. No. 278,459

Claims priority, application Japan, Jul. 22, 1980, 55-99386

Int. Cl.³ H04B *1/58*

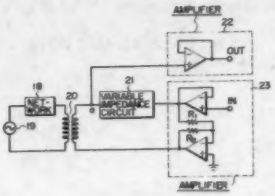
U.S. Cl. 179—170 NC **1 Claim**

1. A hybrid circuit comprising:

a series-connection composed of a variable impedance circuit and the primary winding of a transformer connected to the two-wire port of the hybrid circuit;

an amplifier of the four-wire receive port of the hybrid circuit having a differential output of low impedance connected across said series-connection; and

an amplifier of the four-wire transmit port of the hybrid circuit having a high input impedance connected to the node connection of the variable impedance circuit and the primary winding of the transformer, the impedances of the variable impedance circuit and the primary winding of the transformer being in a state of mutual equilibrium, and the



neutral point potential of the amplifier of the four-wire receive port being applied to an input to the amplifier of the four-wire transmit port.

4,380,691

MAIN SWITCH FOR TAPE RECORDER

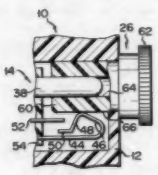
Masanobu Sato, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 11, 1980, Ser. No. 301,224

Claims priority, application Japan, Sep. 19, 1981, 55-133178[U]

Int. Cl.³ H01R *33/30*

U.S. Cl. 200—51 R **3 Claims**



1. In a tape recorder provided with a power jack, into which a cylindrical plug including a first conductive member mounted on the inner periphery of the plug, an insulating member mounted on the top end portion of the outer peripheral surface of the plug, and a second conductive member mounted on the intermediate portion of the outer peripheral surface of the plug and constituting a part of the outer peripheral surface and being insulated from the first conductive member, is inserted, and which includes a rod-like conductive member adapted to snugly fit in the inner periphery of the plug and be electrically connected to the first conductive member, a relay conductive member insulated with respect to the first and second conductive members of the plug, and an elastic conductive member having elasticity and capable of assuming a first position, at which the elastic conductive member is in contact with and electrically connected to the second conductive member of the plug inserted and is separated from the relay conductive member, and a second position, which results from the removal of the plug from the jack and at which the elastic conductive member is in contact with and electrically connected to the relay conductive member,

a main switch for the tape recorder comprising a cylindrical rotary member having an inner periphery, an outer periphery and a recess formed in said outer periphery and adapted to snugly fit on said rod-like conductive member of the power jack when inserted thereinto, said rotary member being rotatable on and about said rod-like conductive member between a first position, at which said outer periphery and said elastic conductive member are in contact with each other and said elastic conductive member and said relay conductive member are separated and

insulated from each other, and a second position, at which said recess corresponds to and faces said elastic conductive member and said elastic conductive member and said relay conductive member are in contact with and electrically connected to each other.

4,380,692

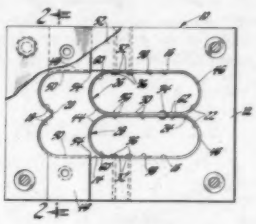
ROLLER BAND SENSOR

Houston F. Blanchard, Santa Barbara, and Lawrence D. Tuchscherer, Goleta, both of Calif., assignors to General Motors Corporation, Detroit, Mich.

Filed May 20, 1981, Ser. No. 266,081

Int. Cl.³ H01H *35/14*

U.S. Cl. 200—61.45 R **5 Claims**



1. A sensor comprising, in combination, a housing including a pair of spaced planar bearing portions, a pair of flexible bands of planar spring material disposed between the bearing portions and forced thereby into generally elongate shape, the adjacent portions of the bands abutting each other and the remote portions of the bands each abutting a respective bearing portion,

means securing the abutting portions to each other,

means securing the remote portion of each band to a respective bearing portion whereby each band is divided into respective first and second end loops intermediate the adjacent and remote portions thereof,

means limiting movement of the bands in one direction to establish a preload position of the bands,

a velocity change of predetermined extent applied to the bands causing said bands to concurrently roll relative to each other along a respective bearing portion and translate from the preload position in an opposite directon to actuated position,

means actuated upon movement of the bands to the actuated position to indicate the occurrence of such a velocity change of predetermined extent,

like end loops of each band having a reduced effective width symmetrical section contiguous like portions of each such band to provide complementary integral preload forces biasing the bands in the one direction to the preload position and resisting movement of the bands in the opposite direction to actuated position by applied velocity changes.

4,380,693

SWITCHING DEVICE

Gerhard Kuhlmann, Stuttgart; Erwin Wolf, Weissach i T., and Günter Wahl, Leinfelden-Echterdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

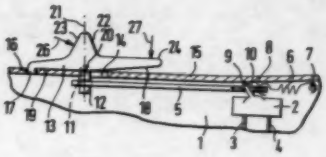
Filed May 22, 1981, Ser. No. 266,343

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1980, 3023691

Int. Cl.³ H01H *15/24, 9/24*

U.S. Cl. 200—330 **17 Claims**

1. A switching device, comprising a switch; an actuating member displaceable in a switching-on direction so as to switch on said switch and also displaceable under the action of a spring force in a switching-off direction so as to switch off said switch, said actuating member being also tiltable, upon displacement in the switching-on direction, to an engaging position for arresting said actuating member and to a disengaging position for releasing said actuating member, so that when said actuating member is displaced in said switching-on direction and to said engaging position it switches on said switch



and is arrested and when said actuating member is tilted to said disengaging position and displaced in said switching-off direction it is released and switches off said switch; means for spring biasing said actuating member in said switching-off direction;

means for holding said actuating member in said engaging position; and means for mounting said actuating member for displacement and tilting.

4,380,694

LASER CUTTING APPARATUS

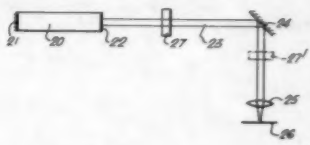
David J. Dyson, Dundee, Scotland, assignor to Ferranti Limited, Cheadle, England

Filed Feb. 18, 1981, Ser. No. 235,504

Claims priority, application United Kingdom, Feb. 26, 1980, 8006423

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 LG **7 Claims**



1. Laser cutting apparatus for cutting a workpiece along a predetermined line comprising a laser producing a continuous output beam while in operation, means for producing circular polarization of the laser output beam, and means for directing the circularly polarized laser output beam onto the workpiece whereby a cut of uniform section is produced in the workpiece in any direction of cut.

4,380,695

CONTROL OF TORCH POSITION AND TRAVEL IN AUTOMATIC WELDING

Jerome W. Nelson, Houston, Tex., assignor to Crutcher Resources Corporation, Houston, Tex.

Filed Jul. 6, 1976, Ser. No. 702,865

Int. Cl.³ B23K *9/12*

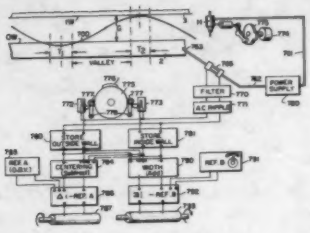
U.S. Cl. 219—125.12 **6 Claims**

1. In welding where an electric arc welding torch moves in an undulating path along a gap having spaced opposed sidewalls to deposit metal in said gap for joining said walls into a unitary structure and where a continuous signal having various frequency components is generated at the torch and in which the torch is caused to weave laterally across said gap, the steps of:

(a) imposing a periodic extreme lateral position-indicating amplitude-modulated carrier signal on said continuous signal, said imposed signal being of frequency different from components contained in said continuous signal to obtain a composite signal having periodic values varying

in amplitude corresponding to consecutive extreme lateral positions and containing other signal components which tend to conceal said periodic values;

(b) removing said concealing signal components from said composite signals by filtering to isolate said periodic values;



(c) taking discrete samples of said periodic values;

(d) summing the signal amplitude values occurring at said opposed sidewalls to produce a sum signal;

(e) comparing said sum signal to a reference value; and

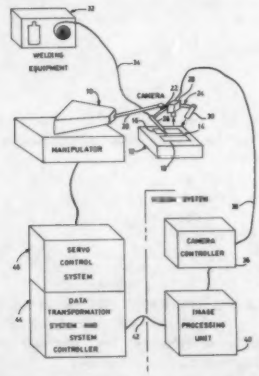
(f) using the result of such comparision to control the width of said weaving path of said arc between said sidewalls.

4,380,696

METHOD AND APPARATUS FOR MANIPULATOR WELDING APPARATUS WITH VISION CORRECTION FOR WORKPIECE SENSING

Ichiro Masaki, Brookfield, Conn., assignor to Unimation, Inc., Danbury, Conn.

Filed Nov. 12, 1980, Ser. No. 206,279
Int. Cl.³ B23K *9/12*
U.S. Cl. 219—124.34 **47 Claims**



1. Control apparatus for manipulator welding apparatus, the manipulator apparatus having a manipulator arm controllable in one or more axes and arranged to perform a weld path on a workpiece at a workpiece station, the control apparatus comprising:

means for storing manipulator arm position data during an initial teach phase representing a desired taught weld path with respect to a reference workpiece at a predetermined location at the workpiece station;

means for projecting a predetermined light pattern on the workpiece at said workpiece station;

means for storing a reference image of said projected predetermined light pattern during said teach phase;

means for moving said manipulator arm along said taught weld path in accordance with said stored manipulator arm position data during a first repeat phase with respect to a second subsequent workpiece;

means for sensing said predetermined projected light pattern on said second subsequent workpiece as said manipulator arm moves along said taught weld path during said first repeat phase;

image processing means responsive to said sensing means for generating deviation data representing the deviation between the actual weld path of said second workpiece and said path described by said manipulator arm during said first repeat phase;

means responsive to said generated deviation data for generating corrected weld path data representing said actual weld path on said second workpiece; and

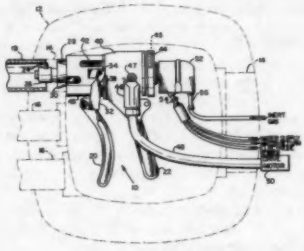
means responsive to said corrected weld path data for moving said manipulator arm and controlling said manipulator welding apparatus to weld said second workpiece along said actual weld path during a second repeat phase.

4,380,697

INTERNAL TUBE WELDING APPARATUS

Gasparas Kazlauskas, Sun Valley, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 222,704, Jan. 5, 1981. This application Jun. 29, 1981, Ser. No. 278,785
Int. Cl.³ B23K *9/225*
U.S. Cl. 219—136 **7 Claims**



1. An apparatus for welding the inside of a circular opening, comprising:

a housing;

an electrode shaft member rotatably mounted within said housing;

jaw means coupled to said housing and movable about said electrode shaft member for releasably gripping the inside of the circular opening;

handle means pivotally coupled to said housing for actuating said jaw means, said handle means being rotatable to permit folding thereof;

a collet disposed about said electrode shaft member and having an expanded outer surface at the forward end thereof;

a plurality of radially-projecting jaw segments movable over and in sliding contact with the expanded outer surface of said collet;

said collet is fixed about said electrode shaft member; and

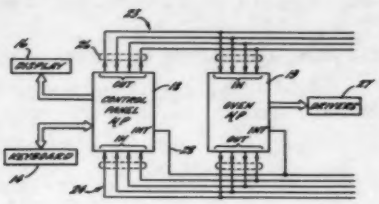
said jaw segments are mounted to move axially over said collet.

4,380,698

MULTIPROCESSOR CONTROL BUS

Orville R. Butts, West Lafayette, Ind., assignor to Roper Corporation, Kankakee, Ill.

Filed Jul. 25, 1980, Ser. No. 172,408
Int. Cl.³ H05B 1/02
U.S. Cl. 219—492 12 Claims



1. A cooking appliance having a plurality of cooking functions performed within a single appliance cabinet including a distributed control arrangement comprising:

(a) a plurality of microprocessor-based control circuits each associated with a different portion of the appliance control, and each physically located within the appliance cabinet but physically located on different printed circuit boards;

(b) a multi-line bus arrangement coupling the control circuits to one another, each said control circuit including means for exchanging control information with another said control circuit via the bus, each said control circuit also including means for preventing exchange of invalid data resulting from noise on the bus; and

(c) a user-control system interface physically connected to and in close proximity with the appliance cabinet for manual entry of cooking control data by the user, said interface being the sole source of user-supplied cooking control information,

in which each microprocessor-based control circuit is associated with a different one of the plurality of cooking functions of the cooking appliance, and

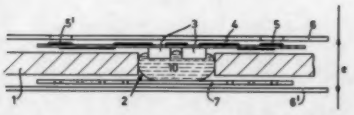
in which one of the microprocessor-based control circuits is a master circuit with the remainder of the circuits being slave circuits, the slave circuits being operable to transfer information onto the bus only in response to data placed on the bus by the master circuit.

4,380,699

PORTABLE, IDENTIFYING ELEMENT CONSTRUCTED AS A LAMINATION OF SHEETS

Michel J. Monnier, Montgeron; Marc A. Monneraye, St Maur; Claude Foucher, Palaiseau, and Pierre Le Marchant, Clamart, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 29, 1981, Ser. No. 278,144
Claims priority, application France, Jul. 9, 1980, 80 15303
Int. Cl.³ G06K 19/06
U.S. Cl. 235—492 4 Claims



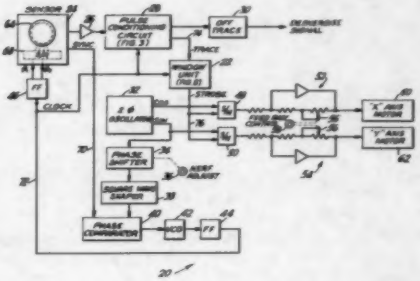
1. A portable identifying element comprising a lamination of sheets composed of electrically insulating synthetic resin material, in which is included at least one integrated solid state electronic circuit for data processing, said element being provided with external access ports for the solid state electronic circuit, said electronic circuit being supported by a carrier sheet composed of electrically insulating synthetic resin material and extending in a cavity which is provided in a main support sheet composed of electrically insulating thermoplastic material and said main support sheet, said carrier sheet being provided with holes which are located on opposite sides of said cavity and through which parts of the first cover sheet and the main support sheet are laminated together.

4,380,700

IMAGE BLANKING CIRCUIT FOR LINE FOLLOWER

George H. Kallen, Indianapolis, Ind., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 29, 1981, Ser. No. 278,137
Int. Cl.³ G05B 1/00
U.S. Cl. 250—202 17 Claims



1. In a curve follower circular scanning apparatus, a gating circuit for setting a sector window comprising:

first means for timing the duration of a scan of a first sector;

second means, triggered by said first timing means, for timing the duration of a scan of a second sector;

means for signaling the presence of a subject within said window, said window being bounded by the sum of said first and said second sectors; and

means responsive to said signaling means for resetting said first and said second timing means upon the detection of said subject.

4,380,701

NUCLEAR WELL LOGGING WITH NEUTRON SOURCE AND SEPARATE SPACED RADIATION DETECTORS TO DETERMINE SILICON/OXYGEN RATIO

Harry D. Smith, Jr., and Ward E. Schultz, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 2, 1980, Ser. No. 192,967
Int. Cl.³ G01V 5/00
U.S. Cl. 250—266 20 Claims

1. A well logging apparatus for simultaneously obtaining a measuring of the relative presence of the elements silicon and oxygen in earth formations in the vicinity of a fluid-filled well borehole, comprising:

(a) sonde means for moving through the well borehole past formations of interest;

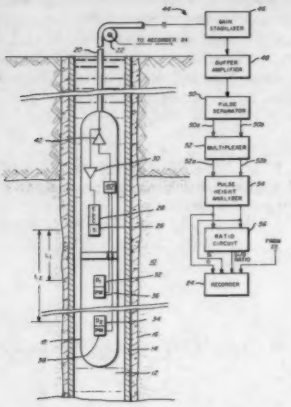
(b) source means mounted in said sonde means for bombarding the formation with high energy neutrons;

(c) first detector means mounted in said sonde spaced a first distance from said source means for detecting gamma radiation from neutron activation of oxygen;

(d) second detector means mounted in said sonde spaced a second distance from said source means for detecting gamma radiation from neutron activation of silicon;

(e) said second distance being such that when said second

detector is moved to a formation of interest substantially all oxygen activation gamma radiation has dissipated; and



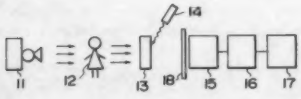
(f) sonde circuit means for forming electrical signals representing gamma radiation detected by said first and second detectors.

4,380,702

RADIATION IMAGE STORAGE PANEL

Kenji Takahashi, and Junji Miyahara, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 11, 1980, Ser. No. 168,801
Claims priority, application Japan, Jul. 11, 1979, 54-87813
Int. Cl.³ G03C *5/16*
U.S. Cl. 250—327.2 **56 Claims**



1. A radiation image storage panel having a fluorescent layer comprising a binder and a stimulable phosphor dispersed therein upon stimulation by rays having a wavelength ranging from 500 to 800 nm, wherein said phosphor is characterized in that said panel has a light-reflecting white pigment layer on one side thereof with respect to the fluorescent layer opposite to the side exposed to the stimulating rays for said stimulable phosphor and that said phosphor is represented by the following general formula (I) or (II);

$$LnOX:aA \quad (I)$$

wherein Ln represents an element selected from the group of La, Y, Gd and Lu, X represents an element selected from the group of Cl and Br, A represents an element selected from the group of Ce and TB, and X is a number satisfying the condition of $0<X<0.1$;

$$(Ba_{1-x}M^{II}_{x})FX_1:yA_1 \quad (II)$$

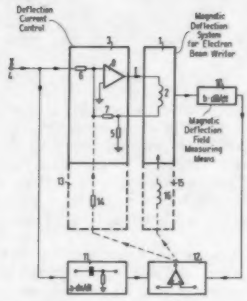
wherein M^{II} represents at least one divalent metal selected from the group consisting of Mg, Ca, Sr, Zn and Cd, X_1 represents at least one halogen selected from the group consisting of Cl, Br and I, A_1 represents at least one element selected from the group consisting of Eu, Tb, Ce, Tm, Dy, Pr, Ho, Nd, Yb and Er, and x and y are numbers satisfying the conditions of $0 \leqq x \leqq 0.6$ and $0 \leqq y \leqq 0.2$.

4,380,703

METHOD AND DEVICE FOR THE REGULATION OF A MAGNETIC DEFLECTION SYSTEM

Reinhold Schmitt, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 4, 1980, Ser. No. 183,946
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1979, 2936911
Int. Cl.³ H01J *3/20*
U.S. Cl. 250—396 ML **5 Claims**


Deflection Current Control
Magnetic Deflection System for Electron Beam Writer
Magnetic Deflection Field Measuring Means

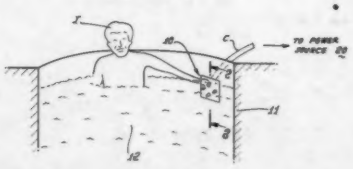
1. A method for regulating a magnetic deflection system for a particle radiation optical device, particularly an electron beam writer, in which the current flowing through deflection coil means is measured and a control signal is generated in a first control loop for readjusting the deflection magnetic field produced by said deflection coil means by means of comparison with a command value, characterized in that given changes in the command value supplied to the first control loop, a second control loop is superimposed for supplementing the control action of said first control loop in that a signal proportional to the magnetic field rate of change (dB/dt) is generated and is compared in the second control loop to a value proportional to the command value rate of change (dx/dt); and in that the comparison output of the second control loop serves as an additional control signal for controlling the deflection magnetic field.

4,380,704

ELECTRICAL SWITCH

Michael S. Wisda, 1142 Sheila Ct., Upland, Calif. 91786

Filed Apr. 28, 1980, Ser. No. 144,442
Int. Cl.³ H01H *19/00*
U.S. Cl. 307—116 **12 Claims**



1. An electrical switch for use in explosive environments, under water, and the like, comprising

a printed circuit board having an electrical circuit pattern deposited thereon, at least a single magnetic reed switch mounted on said board and connected in electrical series

circuit relationship with the electrical circuit pattern on said board, the reed switch having switch contacts in a normally open circuit condition,

an electrical cable having a plurality of electrical conductors arranged therein in an insulatively spaced relationship, said cable being constructed of an electrical insulative material, and being adapted to have one end of each of the electrical connectors connected to an electrical power source,

means for electrically connecting the remaining ends of the individual electrical conductors of the cable in circuit relationship with the electrical circuit pattern of the printed circuit board to provide an electrical circuit path on the printed circuit board through the reed switch to thereby electrically switch the power through the electrical cable in accordance with the electrical circuit condition of the reed switch,

means for completely encapsulating the printed circuit board including the circuit pattern thereon and the connected reed switch and a portion of the electrical cable beyond said cable conductor connecting means in an electrical insulative medium to form a solid unit without any voids in the insulative medium to thereby eliminate any exposed electrical contacts externally of the insulative encapsulated medium whereby the encapsulated elements may be completely immersed in an explosive or corrosive environment, under water or the like,

said encapsulating medium including an aperture spaced adjacent the reed switch while being spaced from the circuit pattern on the printed circuit pattern and extending through the printed circuit board to permit mounting a control shaft therethrough,

a control shaft mounted in said aperture for rotation therein,

one end of the control shaft mounting a permanent magnet rotatable with the control shaft to operate the encapsulated reed switch in accordance with the positions of the magnetic poles of the magnet to thereby provide an electrical circuit path through the cable, printed circuit pattern on said board and the closed contacts of the reed switch when the contacts are magnetically operated by said permanent magnet to a closed circuit position.

4,380,705

DIGITAL SEMICONDUCTOR CIRCUIT

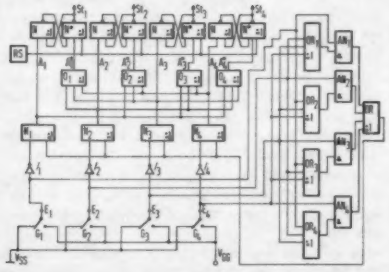
Helmut Rösler, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 29, 1980, Ser. No. 154,576

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1979, 333863

Int. Cl.³ H03K *17/56, 19/20*

U.S. Cl. 307—247 R **8 Claims**



1. Digital semiconductor circuit with a plurality of circuit parts selectively activatable by manual actuation of respective control switches comprising a respective bistable flip-flop associated with each of the control switches, a common logic circuit disposed between the control switches and the bistable flip-flops and being connectible by n signal inputs thereof via the control switches, respectively, to a level of a logical "1", said common logic circuit having 2 n signal outputs pairwise combined, respective pairs of said signal outputs being disposed for controlling respective ones of said bistable flip-flops, each of said bistable flip-flops having a respective signal output for controlling a respective one of the circuit parts activatable by the respective control switches, said bistable flip-flops being initially in a first operating state wherein the circuit parts to be activated are in rest condition immediately subsequent to switching on of the digital semiconductor circuit, said common logic circuit having means responsive to sole actuation of a respective control switch for effecting a transition of the respectively associated bistable flip-flop from said first to said second operating state thereof only and for automatically resetting to said first operating state, with said transition, any nonselected bistable flip-flop which may yet be in said second operating state when the respective control switch is actuated, whereby the circuit part is associated with the respective control switch is activated, the circuit including respective inverters connected to respective ones of said n signal inputs of said common logic circuit addressable by respective ones of the control switches for controlling respective NOR gates having two inputs, one of the inputs of a respective NOR gate being connected to one of said inverters, respectively, and the other of the inputs of the NOR gates being connected in common to another part of said common logic circuit from which a blocking signal is deliverable to all of said NOR gates, the respective NOR gates having an output forming a respective first signal output of said common logic circuit, and including a respective second signal output of said common logic circuit formed by an output of a respective OR gate having (n−1) signal inputs respectively controllable by one of the signal inputs to said common logic circuit which is associated with the others of the control switches, the circuit further including respective AND gates and (n−1) of a total of n additional OR gates having respective inputs connected to the signal inputs of said common logic circuit and controllable thereby, each of said AND gates being associated respectively with one of said (n−1) additional OR gates, said (n−1) additional OR gates having a respective output connected to another input of the respective AND gates associated therewith, said other part of said common logic circuit from which the blocking signal is deliverable comprising yet a further OR gate having respective inputs connected to respective outputs of said AND gates and controllable thereby.

4,380,706

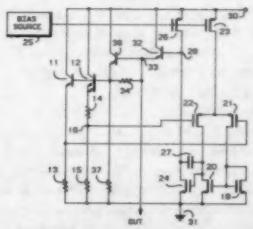
VOLTAGE REFERENCE CIRCUIT

Robert S. Wrathall, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 24, 1980, Ser. No. 219,797

Int. Cl.³ H03K *3/26, 3/01*

U.S. Cl. 307—297 **6 Claims**



1. A voltage reference circuit having a differential amplifier with a first and a second input and an output, the voltage reference circuit comprising: a first transistor having a base

coupled to the output of the differential amplifier and having a first electrode coupled to a first power terminal and having a second electrode; a second transistor having a base coupled to the second electrode of the first transistor, the second transistor also having a first electrode coupled to the first power terminal and having a second electrode; a first resistor coupled between the second electrode of the second transistor and a second power terminal; a third transistor having a base coupled to the second electrode of the second transistor and having a first electrode coupled to the first power terminal and having a second electrode; a second and a third resistor coupled in series between the second electrode of the third transistor and the second power terminal and forming a node between the second and third resistor, the node being coupled to the first input of the differential amplifier; a fourth transistor having a base coupled to the base of the third transistor and having a first electrode coupled to the first power terminal and having a second electrode; and a fourth resistor coupled between the second electrode of the fourth transistor and the second power terminal, and the second electrode of the fourth transistor also being coupled to the second input of the differential amplifier.

4,380,707

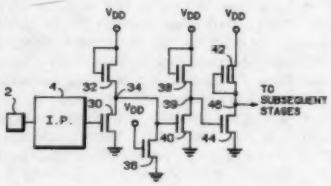
TRANSISTOR-TRANSISTOR LOGIC INPUT BUFFER CIRCUIT WITH POWER SUPPLY/TEMPERATURE EFFECTS COMPENSATION CIRCUIT

Richard D. Crisp, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 16, 1980, Ser. No. 150,536

Int. Cl.³ G05F 1/56; H03K 17/687, 19/003, 19/094

U.S. Cl. 307—443 **2 Claims**



1. An MOS input buffer circuit with compensation for process, supply voltage, and temperature variations, comprising:

a first amplifying stage coupled to a source of supply voltage and having a first input and a first output, said first input for receiving an input signal representative of high and low logic levels;

at least one additional amplifying stage coupled to said source and having a second input coupled to said first output and having a second output;

said first amplifying stage and said second amplifying stage comprising inverters each having at least two enhancement type semiconductor devices with substantially equal channel lengths to provide operating stability over temperature and process variations;

means coupled to said source and to said first amplifying stage comprising a field effect transistor having a channel width substantially equal to the channel width of a first semiconductor device of said first amplifying stage such that the conductivity of the field effect transistor tracks that of said first semiconductor device, for altering the gain of said first amplifying stage in response to fluctuations in said supply voltage; and

wherein said field effect transistor has a gate electrode coupled to said source, a source electrode coupled to ground and a drain electrode coupled to the output of said first inverter.

4,380,708

I²L WITH POLYSILICON DIODES AND INTERCONNECTS

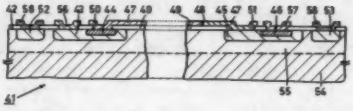
Cornelis M. Hart, Sunnyvale, Calif., assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 50,004, Jun. 18, 1979, abandoned. This application Jul. 23, 1981, Ser. No. 286,233

Claims priority, application Netherlands, Jun. 29, 1978, 7806989

Int. Cl.³ H01L 29/04, 27/04; H03K 19/091, 19/092

U.S. Cl. 307—457 **2 Claims**



1. An integrated circuit having a plurality of gate circuits, which comprises:

a semiconductor body having a major surface;

at least first, second and third bipolar transistors, each having an emitter zone, a base zone forming a signal input and a collector zone located successively in a direction transverse to said major surface, at least the base and collector zones of said transistors adjoining said major surface;

means for supplying current connected to each signal input;

a plurality of diodes connected to each collector zone to form a plurality of signal outputs from each transistor;

an insulating layer on at least a portion of said major surface;

a system of signal connections for connecting at least the collector zone of said first transistor to the base zones of said second and third transistors, said system of signal connections comprising a plurality of paths of conductive material on said insulating layer and locally extending down to said major surface through apertures in said insulating layer to contact at least the collector zone of said first transistor and the base zones of said second and third transistors, said paths of conductive material comprising a polycrystalline semiconductor track and at least first and second diode junctions for coupling the collector zone of said first transistor respectively to the base zones of said second and third transistors, said first and second diode junctions comprising p-n junctions each adjoining and formed from said polycrystalline semiconductor track on at least one side of each junction, each junction being spaced apart from the collector zone of said first transistor and the base zones of said second and third transistors, the distance between the collector zone of the first transistor and the first diode junction measured along the signal connection being larger than the distance between the first diode junction and the base zone of the second transistor measured along the signal connection, and the first and second diode junctions being situated closer to the second and third transistors, respectively, than to the first transistor; and

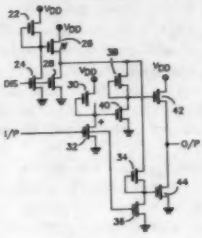
fourth, fifth and sixth bipolar transistors and third and fourth p-n junctions, the collector zones of said fourth and fifth transistor being connected to the base of said sixth transistor by, respectively, said third and fourth p-n junctions, said third p-n junction being closer to said fourth transistor than said sixth, and said fourth p-n junction being closer to said fifth transistor than said sixth.

4,380,709

SWITCHED-SUPPLY THREE-STATE CIRCUIT

Kenneth K. Au, Round Rock, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 15, 1980, Ser. No. 150,019
Int. Cl.³ H03K 19/094, 19/20
U.S. Cl. 307—473 9 Claims



1. A switched-supply three-state circuit capable of assuming first, second and third conditions, comprising:

first means for receiving an enabling signal and a source of supply voltage;

second means for receiving an input signal;

third means coupled to said first and second means and having an output for generating true and complement signal representations of said input signal when the source voltage is supplied to said third means, said output being disabled when said source voltage is blocked from said third means; and

fourth means coupled between said first means and said third means for supplying the source voltage to said third means when said enabling signal is in a first predetermined state, comprising:

first inverter means having a first MOS inverter coupled between ground and said source voltage and having an input coupled to said enabling signal and having an output;

a first field-effect transistor having a drain coupled to said source voltage, a gate coupled to the output of said first MOS inverter and having a source coupled to said third means for supplying voltage thereto; and

a second field-effect transistor having a source coupled to ground, a gate coupled to said enabling signal and a drain coupled to the source of said first field-effect transistor.

4,380,710

TTL TO CMOS INTERFACE CIRCUIT

Paul B. Cohen, New City, N.Y.; William R. Young, Indialantic, and W. Dale Edwards, Indian Harbour Beach, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

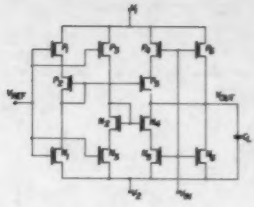
Filed Feb. 5, 1981, Ser. No. 231,671
Int. Cl.³ H03K 19/092, 19/094, 19/20, 17/04
U.S. Cl. 307—475 10 Claims

1. An interface circuit having a signal input terminal, a reference terminal and a signal output terminal comprising:

a complementary field effect transistor inverter having an N and P channel device connected between a pair of supply terminals with the input terminal of the circuit being the input of said inverter and the output terminal of said circuit being the output of said inverter;

a first complementary field effect transistor current mirror means connected between said pair of supply terminals with the reference terminal being the input for the controlling leg and said N channel device being in a first portion of the controlled leg; and said signal input being an input to a second portion of the controlled leg; and

a second complementary field effect transistor current mirror means connected between said pair of supply terminals with the reference terminal being the input for the controlling leg and said P channel device being in a first



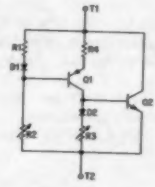
portion of the controlled leg and said input signal being an input to a second portion of the controlled leg.

4,380,711

LINEARIZATION CIRCUIT

Vernon R. Cunningham, Melissa, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 15, 1980, Ser. No. 216,398
Int. Cl.³ H03K 4/00
U.S. Cl. 307—491 3 Claims



3. Variable impedance circuit element means for use as a variable curvature compensation load in an amplifier circuit to minimize nonlinearities in a signal introduced by AGC circuitry upstream in a signal path comprising, in combination:

a first parallel circuit branch comprising resistors R1 and R2;

a second parallel circuit branch comprising R3, a transistor Q1 and a resistor R4 where R4 is a common emitter impedance for Q1, R3 is a collector load impedance for Q1 and the base of Q1 is connected to a point in said first circuit branch between R1 and R2; and

a third parallel circuit branch comprising a collector-emitter path of a transistor Q2 having its base connected to the collector of Q1 and wherein,

the curvature is varied in accordance with changes in the value of resistance in resistors R2 and R3.

4,380,712

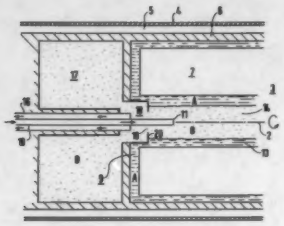
ARRANGEMENT FOR COOLING A SUPERCONDUCTING MAGNET WINDING

Lutz Intichar; Christoph Schnapper, both of Erlangen, and Erich Weghaupt, Mülheim, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Apr. 16, 1981, Ser. No. 254,612
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1980, 3015682
Int. Cl.³ H02K 9/00
U.S. Cl. 310—52 8 Claims

1. In an arrangement for cooling a superconducting magnet winding, especially the superconducting field winding in the rotor of an electric machine, said arrangement including: at least one coolant chamber which, in the operating condition, contains a gaseous phase and a liquid phase of a coolant; at least one feed line for feeding coolant to said chamber; coolant paths through the magnet winding connecting to a liquid space in the

chamber occupied by the liquid phase; and at least one coolant discharge line with a predetermined high flow resistance connected to a vapor space in the chamber occupied by the gaseous phase, the improvement comprising:



(a) a buffer tank; and

(b) a connecting path having a relatively low flow resistance connecting said buffer tank to the vapor space occupied by the gaseous phase.

4,380,713

DOVETAILED TEETH FOR USE IN A SYSTEM FOR FIXING STATOR WINDING BARS IN A ROTATING ELECTRIC MACHINE

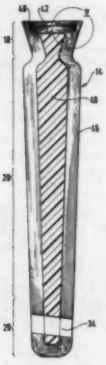
Gillet Roger, and Nithart Henri, both of Belfort, France, assignors to Alsthom-Atlantique and Electricite de France, both of Paris, France

Filed Aug. 6, 1981, Ser. No. 290,449

Claims priority, application France, Aug. 7, 1980, 80 17444

Int. Cl.³ H02K *3/48*

U.S. Cl. 310—214 **6 Claims**



1. Dovetailed teeth for use in fixing stator winding bars of an electric rotating machine having a rotor that rotates about a longitudinal axis inside a stator, the stator having a magnetic circuit with a cylindrical inner surface disposed around the rotor and carrying angularly spaced winding bars that extend longitudinally and fixed against said cylindrical inner surface by means of said dovetailed teeth which are fixed to said magnetic circuit, said teeth protruding radially inwards and being spaced out angularly, each of said teeth being generally prismatic with longitudinal generatrices and comprising: a foot defining a trapezium in cross-section having a large base and a small base both disposed in the tangential direction with the small base nearest the inside of the machine, two flanks connecting said bases together; and a body which extends in the radial direction from the small base of said trapezium and terminating in a head; the teeth being fixed by engaging their feet in longitudinal slots of a trapezoidal cross-section which corresponds to that of said feet, said slots being formed in the inner surface of said stator magnetic circuit; the winding bars being fixed to the stator magnetic circuit by means of the bodies of these teeth which extend radially inwards from the inner surface of the stator magnetic circuit; the improvement wherein each of said dovetailed teeth includes:

a core which extends along the whole length of the tooth with parts within the foot, body and head thereof, a covering for said core parts of said core being disposed inside said foot of said tooth having a base surface which is parallel to and which faces a middle portion of the large base of the foot and two flank surfaces which extend towards the body of the tooth from the side edges of said base surface and coming progressively closer to each other; and

said covering being applied to said core, the thickness of said covering being substantially constant, said covering being constituted by superposed layers of a sheathing fabric disposed parallel to the longitudinal direction completely wrapped about said core foot, body and head following the side surfaces of the tooth, said layers being impregnated with a hard resin so that the covering runs along the foot, body and head in order to transmit radial traction forces from said body and head to said foot; whereby the foot has high resistance to radial inward traction forces.

4,380,714

HIGH-PRESSURE DISCHARGE LAMP

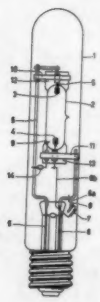
Anton J. Bouman, and Else B. Geertsema, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 15, 1980, Ser. No. 216,106

Claims priority, application Netherlands, Jan. 15, 1980, 8000228

Int. Cl.³ H01J *19/68*

U.S. Cl. 313—549 **1 Claim**



1. A high-pressure discharge lamp having a vacuum-tight glass outer envelope in which a vacuum-tight, light-transmitting discharge vessel is situated in a non-oxidizing medium and is provided with a pair of electrodes and an ionizable filling, in which lamp current conductors extend through the wall of the outer envelope and the wall of the discharge vessel to said pair of electrodes and in which an oxidation-sensitive element is situated between the said two walls, electrically in series with said current conductors, characterized in that the oxidation-sensitive element consists of an electric insulator on which two spaced conductors are provided and are interconnected electrically by a layer of an oxygen gettering metallic evaporable getter vapour-deposited on said insulator.

4,380,715

COLOR TELEVISION DISPLAY TUBE WITH RESISTOR FOR INTERFERENCE RADIATION REDUCTION

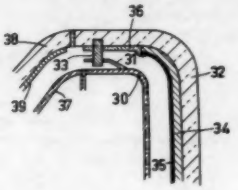
Gosse J. Postma, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 25, 1980, Ser. No. 191,042

Claims priority, application Netherlands, Oct. 15, 1979, 7907596

Int. Cl.³ H01J 29/96, 29/88, 29/81

U.S. Cl. 315—3 3 Claims



1. A color television display tube comprising an envelope having a neck, a cone and a window, an electron beam producing means located in said neck, a display screen provided on the internal surface of said window and covered with an electrically conductive layer, a shadow mask situated at a short distance from the display screen, and means for electrically connecting the shadow mask to the conductive layer, said electrical connection means having a resistance of approximately 5 kOhms to 100 kOhms.

4,380,716

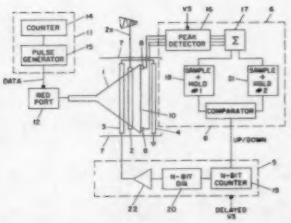
EXTERNAL MAGNETIC FIELD COMPENSATOR FOR A CRT

Arthur L. Romeo; Robert T. Bonelli, both of Greenlawn, and Harvey E. Fishman, Brooklyn, all of N.Y., assignors to Hazeltine Corporation, Greenlawn, N.Y.

Filed Oct. 9, 1981, Ser. No. 309,947

Int. Cl.³ H01J 29/06

U.S. Cl. 315—8 21 Claims



1. Apparatus for compensating for an external magnetic field affecting a cathode ray tube (CRT) display, said apparatus comprising:

(a) means for generating a reference display of a given color in a predetermined area on the face of said CRT;

(b) means for sensing an optical characteristic of the reference display and generating an output signal representative thereof;

(c) means for generating a compensating magnetic field about said CRT; and

(d) means for controlling the strength of said compensating magnetic field in response to said output signal.

4,380,717

MAGNETRONS

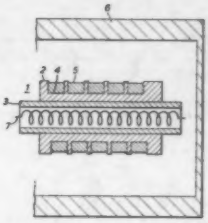
Alan H. Pickering, Chelmsford, England, assignor to English Electric Valve Company Limited, Chelmsford, England

Continuation of Ser. No. 71,714, Aug. 31, 1979. This application Sep. 11, 1981, Ser. No. 301,815

Claims priority, application United Kingdom, Sep. 2, 1978, 35425/78

Int. Cl.³ H01J 25/50

U.S. Cl. 315—39.51 13 Claims



1. A magnetron including a cathode in which a cylindrical support of good electrical conductivity material carries electron emissive material located in recesses formed in the outer cylindrical surface to provide an electron emissive surface area of a predetermined area having interruptions formed by walls of the exposed outer, cylindrical surface, the recesses having substantially constant cross sectional area in the direction of their depth so that as the volume of electron emissive material decreases during operation of the magnetron, said electron emissive surface area remains substantially unreduced.

13. A magnetron including a cathode in which a cylindrical support of good electrical conductivity material carries electron emissive material located in recesses formed in the outer cylindrical surface, the lateral dimensions of each recess in at least one given direction being small compared with the overall dimension of the cathode in the same direction whereby a plurality of areas of electron emissive material which are separated by intervening raised portions of said cylindrical support are positioned along said direction, and the area of the outer cylindrical surface which is occupied by said electron emissive material is large as compared to the rest of said outer cylindrical surface, and wherein the recesses have substantially constant cross sectional areas in the direction of their depth so that as the volume of electron emissive material decreases during operation of the magnetron, the electron emissive surface area remains substantially unreduced.

4,380,718

TRAILER MARKER LIGHT SUBSTITUTION CIRCUIT

Roger L. Miller, Ann Arbor, Mich., assignor to Kelsey-Hayes Co., Romulus, Mich.

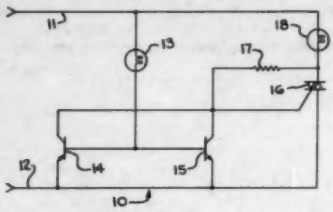
Filed May 22, 1981, Ser. No. 267,218

Int. Cl.³ H05B 39/10; B60Q 1/26

U.S. Cl. 315—93 7 Claims

1. A dual polarity alarm circuit for applying power from two power terminals to a second load in response to failure of a first load comprising a PNP transistor and an NPN transistor each having a base, an emitter and a collector, means connecting said emitters to one of said power terminals, means connecting said first load between the other of said power terminals and said bases of said transistors whereby current normally flows through said first load and the base to emitter junctions of one of said transistors, a bidirectional switch having main terminals and gate means for triggering said switch into conduction, means connecting said switch main terminals and said second load in series between said power terminals, means connecting said gate means to said transistor collectors, and resistor means connected between said gate means and said other power

terminal for causing said gate means to trigger said switch when a conducting one of said transistors ceases to conduct



due to failure of said first load whereby said second load is energized.

4,380,719

ELECTRONIC DEVICE FOR THE STARTING AND A.C. VOLTAGE OPERATION OF A GAS AND/OR VAPOR DISCHARGE LAMP

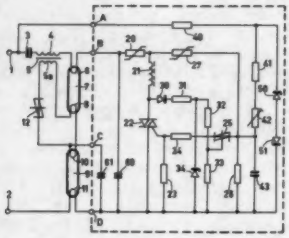
Adrianus M. J. De Bijl, and Hubertus M. J. Chermin, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 17, 1980, Ser. No. 207,321

Claims priority, application Netherlands, Dec. 19, 1979, 7909128

Int. Cl.³ H05B *41/16*

U.S. Cl. 315—101 **16 Claims**



1. An electronic device for the starting and a.c. voltage operation of at least one electric discharge lamp provided with electrodes, the device comprising, at least two input terminals one of which is intended for connection to an electrode of the discharge lamp and the other of which is intended for connection to another lamp electrode, said two input terminals being interconnected by a circuit branch comprising a first controlled semiconductor switching element provided with a control circuit, the control circuit being operative such that, in the fully operating condition of the lamp with an a.c. voltage applied to said two terminals, the semiconductor switching element is made conductive for a period in every half cycle of the applied a.c. voltage, the control of the semiconductor switching element depending on the magnitude of the voltage between the said two input terminals, a second controlled semiconductor switching element having two switching states and connected to the first switching element so that only in a first switching state of the second switching element is the current through the first switching element blocked, means connecting a control electrode of the second switching element to a second control circuit arranged in parallel with a portion of the circuit branch which interconnects the said two input terminals and comprises at least the first switching element, and wherein the second control circuit includes a rectifier and has such a small time constant that, at least immediately after switch-on of the device, the second control circuit causes the second switching element to switch to its first switching state at the beginning of each alternate half cycle of the a.c. voltage.

4,380,720

APPARATUS FOR PRODUCING A DIRECTED FLOW OF A GASEOUS MEDIUM UTILIZING THE ELECTRIC WIND PRINCIPLE

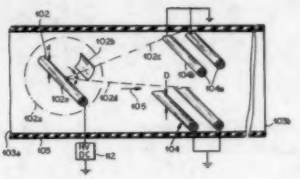
Carl M. Fleck, Schelleingasse 14, 1040 Wien, Austria

Filed Nov. 19, 1980, Ser. No. 208,417

Claims priority, application Austria, Nov. 20, 1979, 7384/79; May 6, 1980, 2397/80; May 6, 1980, 2398/80; Jul. 23, 1980, 3806/80; Jul. 23, 1980, 3808/80

Int. Cl.³ H01J *7/24*

U.S. Cl. 315—111.91 **16 Claims**



1. In an apparatus wherein charged particles are generated by a discharge electrode and are collected on a plurality of spaced-apart collector plates at a potential different from that of said discharge electrode, the improvement which comprises intermediate collector plates not connected to any voltage source and disposed between but insulated from the first-mentioned collector plates and positioned in the electric field between said first collector plates and said discharge electrode to have induced on said intermediate collector plates potentials between those of said first collector plates and said discharge electrode.

4,380,721

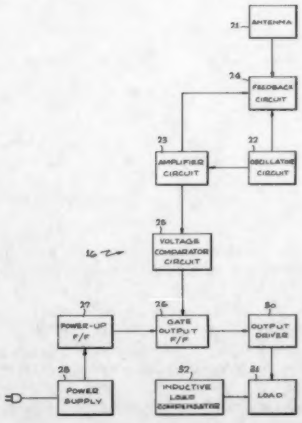
PROXIMITY SWITCH

John W. Bullock, 67 Margarita, Camarillo, Calif. 93010, and Lawrence T. Miranda, 91-564 Pupu St., Ewa Beach, Hi. 96706

Filed Dec. 29, 1980, Ser. No. 221,085

Int. Cl.³ H05B *37/02*; H01K *7/00*

U.S. Cl. 315—362 **1 Claim**



1. A proximity switch for sensing the presence of an object or agent comprising the combination of:

an antenna;

an oscillator coupled to said antenna and adapted to modify oscillations in response to the presence of an object or agent in close proximity to said antenna;

a voltage comparator operably coupled to said oscillator for initiating a trigger signal in response to modification of oscillations from said oscillator;

a voltage setting circuit producing a threshold voltage level;

a bistable circuit operatively coupled to said voltage setting circuit and responsive to said trigger signal in the presence of said threshold voltage level to provide an output voltage level;

a load operably connected to said bistable circuit for receiving said output voltage level and being actuated thereby;

a feedback circuit connected between said antenna and said oscillator;

an amplifier circuit interconnecting said oscillator circuit with said feedback circuit for rectifying its output;

an output driver network including a light emitting diode circuit operably coupled between said load and said bistable circuit;

said voltage setting circuit is a first flip-flop circuit and said bistable circuit is a gate circuit having a second flip-flop circuit;

an inductive load compensator network coupled to said load;

said voltage comparator is coupled to said oscillator circuit via said amplifier circuit for sensing a dip in voltage therefrom resulting from the inference with an electromagnetic field surrounding said antenna; and

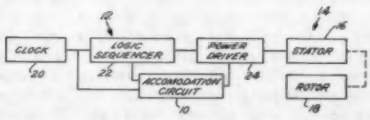
said electromagnetic field is established by said oscillator.

4,380,722

ACCOMMODATION CIRCUIT FOR A STEP MOTOR

Norman E. Oltendorf, Algonquin, Ill., assignor to Bodine Electric Company, Chicago, Ill.

Filed Jan. 14, 1981, Ser. No. 225,126
Int. Cl.³ H02K 29/00
U.S. Cl. 318—696 **16 Claims**



1. An accommodation circuit for use in conjunction with a step motor of the type controlled by a clock, a logic sequencer and a series of power drivers, said logic sequencer providing a series of energization signals, defining an energization pattern, to said power drivers in response to said clock, comprising, in combination:

conversion means, responsive to said clock, for providing a series of override signals to said power drivers for combination with said energization signals to convert said energization pattern to a predetermined alternate pattern;

initialization means for initializing said conversion means; and

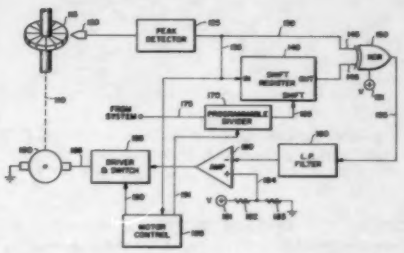
sequence-matching means for sequentially matching said conversion means to said logic sequencer whereby said override signals are properly coordinated with respect to said energization signals.

4,380,723

DIGITAL VELOCITY SERVO

Michael D. Leis, Framingham, and Robert C. Rose, Hudson, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 5, 1979, Ser. No. 46,130
Int. Cl.³ H02P 5/16
U.S. Cl. 318—314 **6 Claims**



1. An electric motor servo control system for controlling the speed of an electric motor comprising:

A. speed signal means for producing a speed signal consisting essentially of pulses whose time period of repitition is proportional to the rotational period of the motor,

B. delay means for receiving the speed signal from said speed signal means and producing a delayed speed signal consisting essentially of pulses delayed from the pulses of the speed signal by a predetermined time interval that is less than the duration of the pulses of the speed signal whenever the speed of the motor is within an intended speed range,

C. logical-combination means for receiving said speed signal and said delayed speed signal and for generating a sequence of constant-width, variable-frequency motor-control pulses wherein the pulse width is substantially equal to said predetermined time interval and the pulse frequency is proportional to the repetition frequency of the speed signal, the duty cycle of the motor-control pulses thereby varying in response to variations of the rotational speed of the motor, and

D. means for receiving the motor-control pulses from said logical-combination means and adapted for coupling to the motor to drive the motor in accordance with the duty cycle of said motor-control pulses.

4,380,724

SHUNT FIELD CONTROL APPARATUS AND METHOD

James H. Franz, Jr., Murrysville, and Stanley W. Jones, McMurray, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 24, 1980, Ser. No. 209,762
Int. Cl.³ H02P 7/06
U.S. Cl. 318—353 **5 Claims**

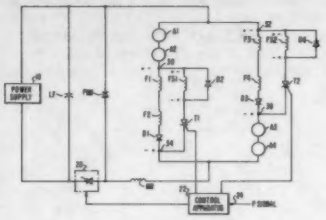
1. In shunt field control apparatus for a motor operative with a voltage supply and having a shunt field and a series connected armature and main field, the combination of

chopper means coupled between the voltage supply and the series connected armature and main field, said chopper means having successive ON and OFF operations to determine the average voltage across the series connected armature and main field and providing a predetermined polarity voltage across the main field during each of said OFF operations,

switch means coupled with the shunt field and conductive for connecting the shunt field across the main field, and

means connected across the shunt field for providing a cur-

rent path around the shunt field in relation to voltage across the shunt field and providing said predetermined



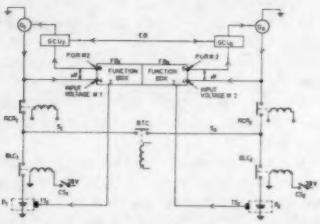
polarity voltage across the switch means to turn OFF the conduction of the switch means.

4,380,725

GENERATOR-BATTERY DC POWER SUPPLY SYSTEM

Moshe Sherman, Rishon le Zion, Israel, assignor to Israel Aircraft Industries, Ltd., Lod, Israel

Filed Apr. 1, 1981, Ser. No. 249,950
Claims priority, application Israel, Apr. 4, 1980, 59777
Int. Cl.³ H02J 7/14, 7/16; H02P 9/00
U.S. Cl. 320—35 10 Claims



1. A power supply system comprising a plurality of sub-systems; each sub-system including a generator producing a DC output voltage, a battery supplying the power in case of failure or termination of operation of the generator, and generator regulating means regulating the output voltage of its respective generator; circuit means connecting the batteries of all said sub-systems in parallel; each of said generator regulating means including a temperature sensor sensing the temperature of its respective battery; comparator means for comparing the output of said temperature sensors and for determining the battery at the highest temperature; and control means effective to control the generator regulating means of all the generators of said sub-systems to decrease their output voltages in response to an increase in the temperature of the battery in the sub-system having the highest temperature, to thereby prevent overheating of any of the batteries by over-charging them.

4,380,726

BATTERY SERVICE LIFE INDICATOR

Ichiro Sado, and Toshiaki Ozawa, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 18, 1978, Ser. No. 925,748
Claims priority, application Japan, Jul. 18, 1977, 52-85843
Int. Cl.³ H01M 10/48
U.S. Cl. 320—48 16 Claims

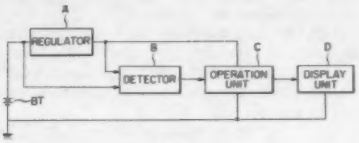
1. An electronic apparatus comprising:

detecting means for detecting a variable output voltage level of a battery;

storage means for previously storing datum corresponding to a predetermined output voltage level of said battery;

life time memory means for storing life time datum of said battery, said life time datum being associated with the datum stored in said storage means;

comparison means for comparing the voltage level detected by said detecting means with the datum stored in said storage means; and



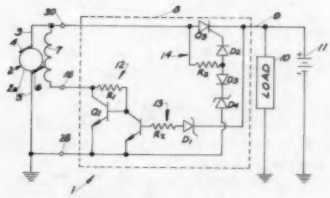
means for reading out the life time datum stored in said life time memory when said comparison means produces a coincidence of the output voltage level of said battery with the datum stored in said storage means.

4,380,727

VOLTAGE REGULATOR SYSTEM FOR MOTORCYCLES AND THE LIKE

Roger Gray, Cincinnati, Ohio, assignor to Thomas H. Rudd, Wayzata, Minn.

Filed Mar. 25, 1981, Ser. No. 247,515
Int. Cl.³ H02P 9/30
U.S. Cl. 322—28 26 Claims



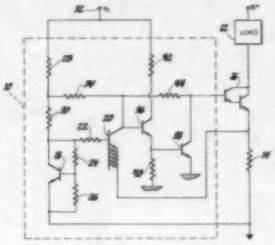
1. In a motor vehicle electrical charging system for producing a relatively low regulated DC output voltage of the type having generator means for producing a generator output voltage comprising a DC generator having a pair of armature contacts and a field winding having one terminal connected to one of said contacts, and load means connected to said regulated output voltage comprising a storage battery and a variable load, the improvement in combination therewith comprising means for regulating said generator output voltage to a relatively constant value including field winding control means for regulating the flow of current through said field winding, sensing means connected between said control means and said regulated output voltage operating to cause increased current flow through said field winding when said regulated output voltage is less than a first predetermined value and to cause decreased current to flow through said field winding when said regulated output voltage is greater than a predetermined value, and output voltage control means comprising switch means connected between said first mentioned field winding terminal and said regulated output voltage and second sensing means for enabling said switch means for permitting current flow to said load from said generator means only when the value of regulated output voltage is less than a second predetermined value.

4,380,728

CIRCUIT FOR GENERATING A TEMPERATURE STABILIZED OUTPUT SIGNAL

Mark B. Kearney, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed May 19, 1981, Ser. No. 265,205
Int. Cl.³ G05F 1/58
U.S. Cl. 323—281 5 Claims



1. A circuit for providing a voltage that is substantially independent of temperature variations, comprising in combination:

first and second transistors;

a first resistor coupled between the bases of the first and second transistors;

a second resistor coupled between the base and emitter of the first transistor;

a load impedance coupled between the emitters of the first and second transistors; and

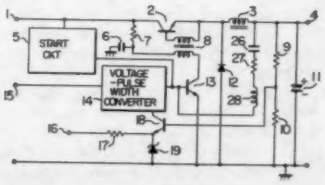
supply means effective to bias the first and second transistors conductive so that the emitter current density of the first transistor is greater than the emitter current density of the second transistor to produce a difference in the base-emitter voltages of the first and second transistors having a positive temperature coefficient, the voltage across the first resistor being proportional to the base-emitter voltage of the first transistor and having a negative temperature coefficient, whereby a substantially temperature independent voltage is provided across the load impedance that is the sum of the voltage across the first resistor having a negative temperature coefficient and the difference in the base to emitter voltages of the first and second transistors having a positive temperature coefficient.

4,380,729

SWITCHING REGULATOR

Masaro Kaku, Ebina; Yasumasa Sawaki, and Kunio Ando, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 19, 1981, Ser. No. 275,256
Claims priority, application Japan, Jun. 19, 1980, 55-82165
Int. Cl.³ G05F 1/46
U.S. Cl. 323—285 6 Claims



1. A switching regulator comprising:

(a) a D.C. input terminal across which and a common terminal an unstabilized D.C. voltage is applied,

(b) a switching element having a control input terminal, an output terminal and an input terminal connected to said D.C. terminal,

(c) a D.C. output terminal across which and said common terminal a stabilized D.C. voltage is produced,

(d) a rectifying filter circuit having an input terminal connected to said output terminal of said switching element and an output terminal connected to said D.C. output terminal for rectifying a voltage chopped by said switching element,

(e) a control circuit having an input terminal across which and said common terminal a switching pulse is applied, a control input terminal coupled to said D.C. output terminal and an output terminal for providing a control output signal, for varying a pulse width of said switching pulse in accordance with a change in the voltage at said D.C. output terminal to produce said control output signal,

(f) an exciting transistor having a base electrode coupled to said output terminal of said control circuit, a collector electrode coupled to said control input terminal of said switching element and an emitter electrode coupled to said common terminal, and

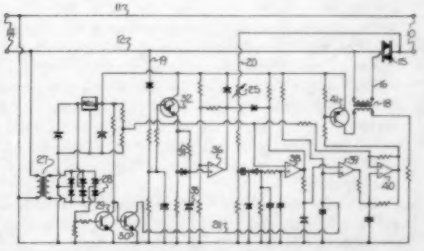
(g) a voltage feedback circuit connected between said D.C. output terminal and said base electrode of said exciting transistor, said voltage feedback circuit comprising a series circuit of a capacitive element, a resistive element and a reactive element connected in series between the D.C. output terminal and the exciting transistor base electrode.

4,380,730

ELECTRICAL POWER REGULATING APPARATUS AND METHOD

Henry H. Morton, Jr., 100 Covington St., Wadesboro, N.C. 28170

Filed May 6, 1981, Ser. No. 261,259
Int. Cl.³ G05F 5/00
U.S. Cl. 323—300 12 Claims



1. Apparatus for regulating alternating current electrical power conducted to an electrical load and comprising:

conductor means for operative connection with an alternating current electrical power source and an electrical load and for conducting power from the source to the load,

a gate controlled bidirectional semiconductor switch electrically interposed in said conductor means and operable in conductive and nonconductive states for controlling conductance of alternating current electrical power from the source to the load, and

sensing circuit means electrically coupled to said semiconductor switch for gating said switch into conductive state and electrically coupled to said conductor means for sensing fluctuation in voltage supplied from the source and fluctuation in voltage delivered to the load caused by load current changes and line resistance, said sensing circuit means comprising setpoint means for establishing a predetermined average voltage for conductance through

said semiconductor switch and feedback means for responding to voltage and current fluctuation by maintaining said predetermined average voltage.

4,380,731

SYSTEM FOR MONITORING THE OPERATION OF INDIVIDUAL CONNECTORS IN A MULTIPATH COUPLING NETWORK

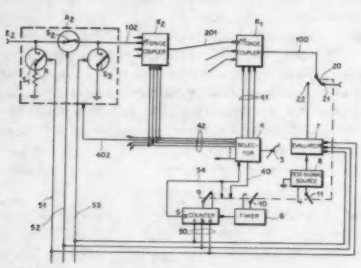
Dietrich E. Alker, Eningen U.A., Fed. Rep. of Germany, assignor to Wandel U. Goltermann GmbH & Co., Reutlingen, Fed. Rep. of Germany

Filed Mar. 5, 1980, Ser. No. 127,311

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1979, 2909268

Int. Cl.³ G01R *31/02, 15/12*

U.S. Cl. 324—51 7 Claims



1. In a signal-processing system, in combination:

a coupling network comprising a plurality of connectors which are selectively activable, one at a time, for establishing one of a plurality of signal paths through said network, each of said connectors including an alternation of shunt and series switches, each series switch being closed and each shunt switch being open in an active state to facilitate the transmission of a pilot signal therethrough in series with an outlying terminal of the respective connector, each series switch being open and each shunt switch being closed in an inactive state to decouple said outlying terminal of the connector from the remainder of said network;

selector means operable to emit commands deactivating an active connector and activating an inactive connector for a switchover from one signal path to another;

a source of test signals;

switching means responsive to operation of said selector means for connecting said source via a common section of the signal paths of said network to a hitherto active connector involved in said switchover before decoupling same from said common section and for overriding the commands of said selector means with successive reversal of all shunt and series switches of said hitherto active connector in a sequence causing the impedance thereof to alternate between low and high levels until the opposite state is reached, said hitherto active connector remaining coupled to said common section throughout said sequence; and

evaluating means between said source and said common section for comparing the responses of said test signal to said low and high levels with predetermined values and generating a malfunction indication upon detection of a significant deviation from said predetermined values.

4,380,732

SIGNAL SPECTRUM DISPLAY APPARATUS

Yoshiaki Tanaka, Tokyo, and Mamoru Inami, Yokohama, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

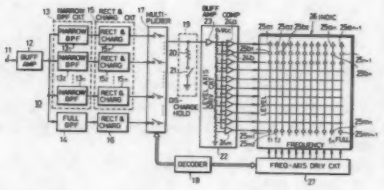
Filed Aug. 22, 1980, Ser. No. 180,502

Claims priority, application Japan, Aug. 24, 1979, 54-107768

The portion of the term of this patent subsequent to Dec. 22, 1998, has been disclaimed.

Int. Cl.³ G01R *23/16*

U.S. Cl. 324—77 D 8 Claims



1. A signal spectrum display apparatus comprising:

a plurality of band-pass filters respectively having filtering bands of different center frequencies and operating to filter an input signal thereby to band-divide the input signal fed through an input terminal;

a plurality of rectification and charging circuits connected respectively to said band-pass filters, each of said rectification and charging circuits comprising a rectifying element, and a capacitor which is charged and discharged by being supplied with voltage rectified by said rectifying element;

a display section having displaying means including the same number of display systems as band-pass filters each of said systems respectively corresponding to a band-pass filter;

means for supplying the output signals of rectification and charging circuits to the displaying means and causing level displaying by the displaying means of those systems corresponding respectively to the output signal levels of said band-pass filters; and

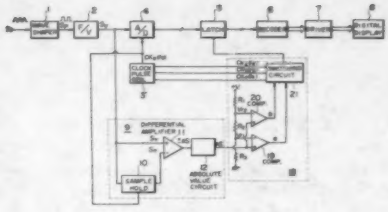
switching means connected between a point between said rectification and charging circuit and said display section, and the ground,

said capacitor charging and discharging when said switching means is closed, whereby the input signal level is displayed in real-time in said display section, and said capacitor stopping charging and discharging when said switching means is opened, whereby the maximum input signal level is successively displayed in said display section in response to the output voltage held in response to successive higher input signal voltage.

4,380,733
FREQUENCY AND SPEED DISPLAY DEVICE

Hiroshi Yano, Higashiyamato; Teruo Kawasaki, Yokohama; Hiroyuki Nomura, Fujisawa, and Mikio Takeuchi, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Aug. 25, 1980, Ser. No. 180,956
Claims priority, application Japan, Aug. 24, 1979, 54-107181
Int. Cl.³ G01P 3/48, 3/54
U.S. Cl. 324—166 11 Claims

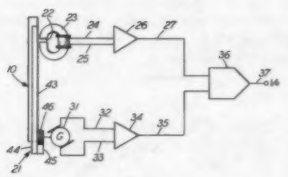


1. A speed display device comprising:
means for sensing the magnitude of the rate of change of a speed to be displayed, and
means for controlling the time interval for updating the speed displayed according to the sensed magnitude.

4,380,734
MEASURING MAGNETIC INTENSITY INDEPENDENT OF SPEED IN A SUCCESSION OF MOVING MAGNETIC STRIPS

George L. Allerton, Orefield, Pa., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,376
Int. Cl.³ G01R 33/12; G01N 27/72; G06K 9/00
U.S. Cl. 324—225 12 Claims

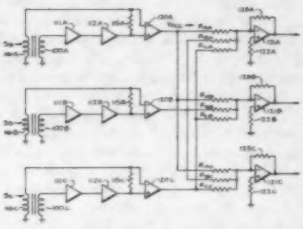


1. A method of measuring magnetic intensity in each of a succession of magnetic strips in an article, comprising:
producing relative motion between the article and a magnetic sensing head to produce a succession of first voltage waveforms, each having a shape substantially characterized by the positions of the poles in a respective strip and wherein each incremental portion of the shape has an amplitude proportional to the magnetic intensity sensed along the surface of the strip and to the instantaneous speed of the relative motion between the sensing head and such surface;
producing a second voltage waveform having a shape for each strip wherein each incremental portion has an amplitude proportional to an instantaneous speed equivalent to the speed producing the first voltage waveform for the respective strip; and
simultaneously feeding the first waveform for each strip into the numerator input and the second waveform into the denominator input of a dividing circuit having a processing speed sufficient to produce a third voltage waveform of a shape wherein each incremental portion is independent of the speed of the relative motion and is faithful in amplitude and position to the poles in the strip.

4,380,735
COMPENSATING FEEDBACK SYSTEM FOR MULTI-SENSOR MAGNETOMETERS

Malcolm E. Bell, Medicine Hat, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Dec. 1, 1980, Ser. No. 211,938
Claims priority, application Canada, Feb. 29, 1980, 345355
Int. Cl.³ G01R 33/025
U.S. Cl. 324—244 4 Claims

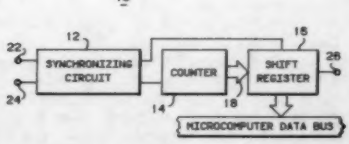


1. A magnetometer having first and second sensor feedback systems each comprising:
sensor means for sensing a magnetic field;
feedback coil means associated with said sensor means for providing a feedback field at the latter;
feedback circuit means for energizing said feedback coil means in response to sensing of the magnetic field by said sensor means and thereby producing at said sensor means a feedback field for cancelling the sensed field at said sensor means;
means for deriving from said feedback circuit means a first electrical signal proportional to the feedback field at said sensor means; and
means for converting said first electrical signal to a second electrical signal proportional to said feedback field of said feedback coil at the sensor means of the other one of said sensor feedback systems; and
means for combining the first electrical signal of each of said systems with the second electrical signal of the other of said systems to provide two output signals corresponding, respectively, to the sensed magnetic fields at said sensor means.

4,380,736
PERIPHERAL INTERFACE ADAPTER CIRCUIT FOR COUNTER SYNCHRONIZATION

William Pfaff, Round Rock, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 4, 1981, Ser. No. 260,520
Int. Cl.³ H03K 17/00, 5/13; H03L 7/00
U.S. Cl. 328—73 7 Claims



1. An interface circuit for providing in synchronization with

a synchronizing signal, an output signal in response to an input signal, the interface circuit comprising:

first storage means for receiving the input signal and the output signal, the first storage means assuming a first logic state in response to the input signal and a second logic state in response to the output signal, and providing a transfer signal indicative of the logic state thereof;

second storage means for receiving the transfer signal, the synchronizing signal and a first reset signal, the second storage means assuming the logic state of the first storage means as indicated by the transfer signal in response to the synchronizing signal and the second logic state in response to the first reset signal, and providing the output signal indicative of the logic state thereof;

first reset logic means for receiving the synchronizing signal and the output signal, and for providing the first reset signal in response to the absence of the synchronizing signal, but only when the second storage means are in the first logic state as indicated by the output signal;

third storage means for receiving the output signal and a second reset signal, the third storage means assuming the first logic state in response to the second storage means assuming the second logic state as indicated by the output signal and the second logic state in response to the second reset signal, and providing an enable signal indicative of the logic state thereof; and

second reset logic means for receiving the synchronizing signal and the enable signal, and providing the second reset signal in response to the presence of the synchronizing signal, but only when the third storage means are in the first logic state as indicated by the enable signal.

4,380,737

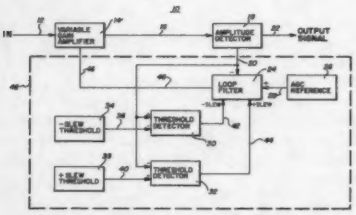
FAST AGC SLEW CIRCUIT

David E. Sanders, Kenneth City, Fla., assignor to E-Systems, Inc., Dallas, Tex.

Filed Nov. 12, 1980, Ser. No. 206,073

Int. Cl.³ H03G *3/20*

U.S. Cl. 330—134 **10 Claims**



1. An automatic gain control circuit comprising:

a variable gain amplifier having input thereto a received signal and having the gain thereof responsive to a gain control signal;

an amplitude detector connected to receive from said amplifier the received signal transmitted therethrough, said amplitude detector generating an amplitude signal corresponding to the amplitude of the received signal input to said amplitude detector;

means for generating a first drive signal when said amplitude signal exceeds a first threshold signal;

means for generating a second drive signal when said amplitude signal is less than a second threshold signal; and

means for generating a first gain control signal varying as a function of said amplitude signal when said amplitude signal is between the amplitudes of said threshold signals, generating a second gain control signal varying as a function of said first drive signal when said amplitude signal exceeds the amplitude of said first threshold signal and generating a third gain control signal varying as a function of said second drive signal when said amplitude signal is less than the amplitude of said second threshold signal.

4,380,738

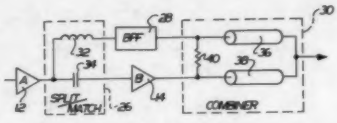
RF AMPLIFIER APPARATUS

Robert S. Wagner, Quincy, Ill., assignor to Harris Corporation, Melbourne, Fla.

Filed Feb. 10, 1981, Ser. No. 233,059

Int. Cl.³ H03F *3/189*

U.S. Cl. 330—151 **12 Claims**



1. Apparatus for interconnecting two high gain, low input impedance amplifiers to amplify an RF signal, comprising:

means for providing said RF signal to the input of a first one of said amplifiers such that said first amplifier provides a first amplified signal;

coupling means responsive to said first amplified signal for passively coupling said signal to the input of the second one of said amplifiers such that said second amplifier provides a second amplified signal, and to a combining means; and

combining means for combining the first amplified signal provided thereto by said coupling means and the second amplified signal provided thereto by said second amplifier means to provide a combined amplified signal;

wherein said coupling means divides the power of said first amplified signal between the signals provided to said combining means and to said second amplifier means such that the signal provided to said second amplifier means has a first power level for providing a selected signal drive to said second amplifier means and substantially all of the residual power of said first amplified signal over and above said first power level is fed forward to the combining means, and wherein said coupling means has an input impedance which matches the output impedance of said first amplifier means.

4,380,739

ELECTRONIC DIFFERENTIAL CONTROLLER

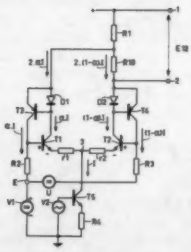
Henri J. Velo, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 17, 1980, Ser. No. 198,097

Claims priority, application Netherlands, Nov. 19, 1979, 7908411

Int. Cl.³ H03F *3/45*; H03G *3/30*

U.S. Cl. 330—254 **11 Claims**



1. An electronic differential controller comprising first and second transistors coupled together to form a differential am-

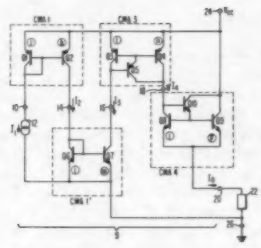
plifier with each transistor having an emitter connected to a point of constant voltage via an input signal current source, means for deriving an output signal from the collector circuit of one of said transistors, means coupling base electrodes of the first and second transistors to a control circuit for adjusting the currents in said transistors, said control circuit comprising first and second resistors having a first terminal connected to the base electrodes of the first and second transistors, respectively, and means for connecting a second terminal of said resistors together, and wherein the collector circuits of the first and second transistors include means for injecting currents into said resistors that are proportional to the collector currents flowing through the first and second transistors.

4,380,740

CURRENT AMPLIFIER

Leonard A. Kaplan, Fords, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 31, 1980, Ser. No. 202,485
Int. Cl.³ H03F 3/18
U.S. Cl. 330—288 **10 Claims**



1. A current amplifier having input and output terminals comprising:

a first current mirror amplifier having input and output electrodes, the input electrode thereof being connected to said input terminal;

a second current mirror amplifier having respective input and output electrodes, the output electrode thereof being connected to said output terminal;

means for connecting the output electrode of said first current mirror amplifier to the input electrode of said second current mirror amplifier;

one of said first and second current mirror amplifiers comprising first and second transistors of like conductivity type having respective emitter, base and collector electrodes, means for connecting said collector electrode of said first transistor to said input electrode of said first current mirror amplifier; and means for connecting said first and second transistors as a current mirror amplifier wherein the current gain thereof decreases as the respective beta of said first and second transistors decrease; and

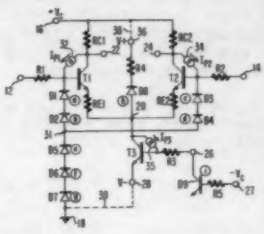
the other of said first and second current mirror amplifiers comprising third and fourth transistors of like conductivity type having respective emitter, base, and collector electrodes, means for connecting said collector electrode of said third transistor to said input electrode of said second current mirror amplifier; and means for connecting said third and fourth transistors as a current mirror amplifier wherein the current gain thereof increases as the respective beta of said third and fourth transistors decreases.

4,380,741

PHOTOCURRENT COMPENSATION FOR ELECTRONIC CIRCUITRY EXPOSED TO IONIZING RADIATION

James D. Mazgy, Parsippany, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 10, 1980, Ser. No. 205,341
Int. Cl.³ H03F 3/08; H03K 17/00; H03F 17/00
U.S. Cl. 330—308 **17 Claims**



1. In combination:

supply means for receiving an operating potential;

a transistor having base, emitter and collector electrodes, and having a semiconductor junction between its collector and base electrodes;

means including load means for coupling the base, emitter and collector electrodes of said transistor to said supply means to condition said transistor for conduction; and

compensating means for conducting a current substantially equal to a photocurrent induced in the semiconductor junction of said transistor by ionizing radiation incident thereon including:

a plurality of serially connected semiconductor junctions poled for conduction in like direction and responsive to said ionizing radiation for generating a compensating photocurrent substantially equal to said induced photocurrent;

means coupling said supply means to one end of said plurality of serially connected semiconductor junctions to reverse bias said plurality of serially connected semiconductor junctions; and

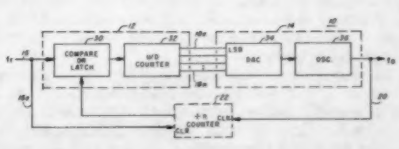
means for coupling the other end of said plurality of serially connected semiconductor junctions to one of the collector and base electrodes of the semiconductor junction of said transistor to make said compensating photocurrent flow with polarity sense opposite to that of said induced photocurrent.

4,380,742

FREQUENCY/PHASE LOCKED LOOP CIRCUIT USING DIGITALLY CONTROLLED OSCILLATOR

Patrick J. Hart, Johnson City, Tenn., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 4, 1980, Ser. No. 175,170
Int. Cl.³ H03L 7/14
U.S. Cl. 331—1 A **9 Claims**



1. A circuit for synchronizing the frequency and/or phase of an output signal to a reference frequency signal comprising:

a digitally controlled oscillator for producing said output signal which can be varied dependent upon a digital signal

which can be varied and applied to the input of the oscillator,

comparator means coupled to said output signal from said oscillator and to said reference frequency signal for determining which of said signals occurs first and generating at least one said digital signal to be applied to the input of the oscillator indicating whether the frequency of said output signal should be increased or decreased, the comparator means including a compare means, up/down counter means whose input is coupled to the compare means and whose output is coupled to said oscillator,

an additional counter means whose input is coupled to said output signal and whose output is coupled to said compare means for dividing down the frequency of said output signal, and

means responsive to the occurrence of a rising edge in said reference frequency signal waveform for clearing the additional counter and resetting the up/down counter means.

4,380,743

FREQUENCY SYNTHESIZER OF THE PHASE LOCK LOOP TYPE

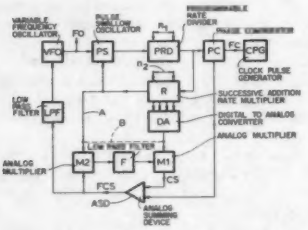
Michael J. Underhill, and Nigel J. Walters, both of Horsham, England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 19, 1981, Ser. No. 226,326

Claims priority, application United Kingdom, Jan. 21, 1980, 8001889

Int. Cl.³ H03L *7/18*

U.S. Cl. 331—1 A **8 Claims**



1. A phase lock loop type frequency synthesizer for producing a synthesized frequency signal comprising:

(a) a variable frequency oscillator for providing the synthesized frequency signal in response to a frequency control signal;

(b) a clock pulse generator for producing a reference frequency signal;

(c) a phase comparator for comparing the phases of first and second signals applied to first and second inputs thereof, thereby effecting production of the frequency control signal;

(d) first and second means for coupling the variable frequency oscillator output and the clock pulse generator output to the first and second inputs of the phase comparator, respectively, one of said means digitally reducing the frequency of the respective frequency signal and applying the reduced frequency signal to the respective input of the phase comparator;

(e) a successive addition rate multiplier, including an accumulator, for adding a predetermined increment Y to any accumulated values stored in the accumulator in response to each pulse of the reduced frequency signal, said multiplier producing an overflow pulse each time the capacity C (where C≧Y) of the accumulator is exceeded while leaving the excess as residue in the accumulator;

(f) means for producing a correction signal in response to said residue; and

(g) means coupled to the phase comparator for correcting the frequency control signal in response to the correction signal to compensate for any variation in the frequency control signal caused by jitter in the pulse rate of the reduced frequency signal;

characterized in that the means for producing a correction signal further includes a feedback loop responsive to any residual ripple on the frequency control signal to eliminate said ripple.

4,380,744

STABILIZED OSCILLATOR FOR MICROWAVES WITH FREQUENCY CONVERSION AND ITS SOLID STATE CONSTRUCTION

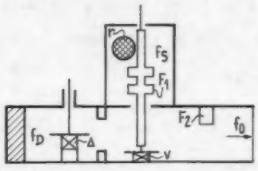
Gerard Kantorowicz, Paris, France, assignor to Thomson - CSF, Paris, France

Filed Jun. 12, 1980, Ser. No. 158,864

Claims priority, application France, Jun. 15, 1979, 79 15452

Int. Cl.³ H03B *9/14*

U.S. Cl. 331—107 R **7 Claims**



1. A stabilized microwave oscillator with frequency conversion for producing a wave of frequency f_o comprising: a non-linear reactance; three parallel branches coupled to said non-linear reactance; said non-linear reactance's value being dependent on the voltage applied to it; the first of said three branches having a resonant circuit at frequency f_s; the second of said three branches having a resonant circuit at frequency f_o; and the third of said three branches having a negative resistance dipole for providing a pump wave at frequency f_p; said frequency f_p substantially exceeding said frequency f_s, and frequency f_o=frequency f_p−frequency f_s; means for inputting power in the third branch; and means for extracting power at frequency f_o from the second branch; stabilization in said second branch at frequency f_o being achieved by adjusting the first branch at frequency f_s.

4,380,745

DIGITALLY CONTROLLED TEMPERATURE COMPENSATED OSCILLATOR SYSTEM

Michael L. Barlow, Silverdale, and Alan L. Lindstrum, Bainbridge Island, both of Wash., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 7, 1980, Ser. No. 205,027

Int. Cl.³ H03L *1/02*

U.S. Cl. 331—176 **3 Claims**

1. A temperature-compensated oscillator system for producing a system output signal of a constant frequency, which comprises:

(a) an oscillator having a known output frequency versus temperature characteristic;

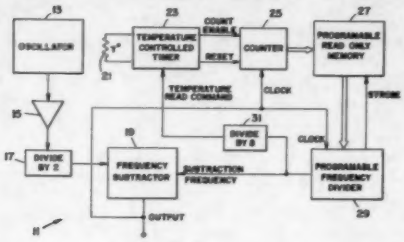
(b) a temperature sensor for producing a first output signal proportional to the temperature at which the oscillator is operating;

(c) a temperature-controlled timer coupled to receive the first output signal, said temperature controlled timer producing a second output signal having a duration which is related to the temperature sensed by said temperature sensor;

(d) means for converting said second output signal to a first

binary number representing the temperature sensed by said temperature sensor;

(e) a programmable memory coupled to receive said first binary number on its address input, the memory address identified by said first binary number containing a second binary number representing an error frequency to adjust the frequency of the output signal from the oscillator;



(f) means for generating a signal having said error frequency in response to said second binary number, said means for generating coupled to receive said addressed second binary number; and

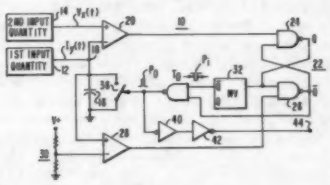
(g) means for combining said signal at said error frequency with the output signal from said oscillator to produce said temperature-compensated system output signal.

4,380,746

PULSE MODULATOR USING CAPACITOR CHARGING AND DISCHARGING CIRCUITS

Shan C. Sun, Bell, Pa., and Larry L. Church, Jefferson, Ohio, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 3, 1981, Ser. No. 239,917
Int. Cl.³ H03K 7/06
U.S. Cl. 332—9 R **7 Claims**



1. A pulse modulator for providing pulses having a predetermined parameter proportional to at least one input quantity, comprising:

a first input quantity,

energy storage means,

said energy storage means being charged by said first input quantity to provide a changing quantity,

a second input quantity,

first means comparing said second input quantity and said changing quantity, said first means providing a predetermined signal when the compared quantities have a predetermined relationship,

second means responsive to the predetermined signal being provided by said first means for providing a first discharge signal,

third means responsive to the predetermined signal being provided by said first means for providing a second discharge signal,

fourth means for discharging said energy storage means in response to either of the discharge signals, and for immediately enabling said energy storage means to be charged by said first input quantity,

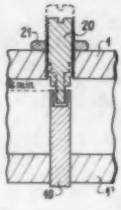
and output means providing a pulse in response to each occurrence of the predetermined relationship between the compared quantities.

4,380,747

TUNABLE ULTRA-HIGH FREQUENCY FILTER WITH VARIABLE CAPACITANCE TUNING DEVICES

Jean C. Curtinot; Xavier Delestre, and Jean Fouillet, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Feb. 25, 1981, Ser. No. 237,997
Claims priority, application France, Mar. 4, 1980, 80 04833
Int. Cl.³ H01P 1/207, 1/00
U.S. Cl. 333—202 **9 Claims**



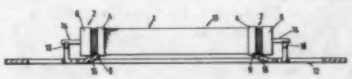
1. A tunable ultra-high frequency filter comprising at least one variable capacitance tuning device incorporating first and second coaxial fingers fitted up in the filter, the first finger being a hollow cylindrical body having an external diameter with an end face at least partly flat, and the second finger comprising a cylindrical body having the same external diameter with an end face at least partly flat, extended with a plunger having a diameter much smaller than the external diameter of the cylindrical bodies which is displaceable relative to the first finger between a minimum and a maximum penetration positions where the plunger and the hollow body of the first finger have minimum and maximum facing surfaces for determining a first capacitance variation, said two cylindrical bodies being displaceable relative to one another, the variable distance between the corresponding flat faces determining a second capacitance variation.

4,380,748

BOBBINS FOR ELECTRICAL COILS

John Hill, 8 Westleigh Dr., Bickley, Kent, and Royston W. Bannister, 11 Foalhurst Close, Tonbridge, Kent, both of England

Filed Dec. 15, 1980, Ser. No. 216,751
Claims priority, application United Kingdom, Dec. 21, 1979, 7944088
Int. Cl.³ H01H 1/66
U.S. Cl. 335—151 **9 Claims**



1. A reed relay assembly, comprising:

a bobbin having a hollow interior;

first and second spaced apart flanges integrally formed on said bobbin for defining therebetween a first main winding space, at least one of said flanges having at least one slot for defining a wire passageway;

third and fourth flanges integrally formed on said bobbin and axially spaced from said first and said second flanges for

defining a second and a third annular termination winding space;

a selected length of electrical wire wrapped a preselected number of turns around said first winding space to provide a main coil and wrapped a preselected number of turns around said second and said third annular termination winding spaces to provide termination windings the individual turns of which are electrically joined together to provide first and second electrical terminals for said main coil; and

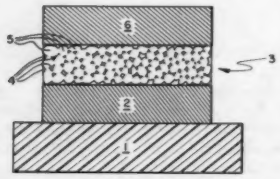
a reed switch disposed through said hollow interior and within said main coil.

4,380,749

ONE-TIME ELECTRICALLY-ACTIVATED SWITCH

Charles W. Eichelberger, Schenectady, and Robert J. Wojnarowski, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 29, 1980, Ser. No. 220,343
Int. Cl.³ H01C *13/00*
U.S. Cl. 338—215 14 Claims



1. A one-time electrically-activated switch, comprising: a polymeric binder containing an agglomeration of particles of a conductive material, essentially all of said particles having a surface normally coated with a layer of an oxide compound of the conductive material, said conductive material being present in an amount sufficient to establish particle-to-particle contact throughout the binder, the oxide surface and the thickness of said binder being sufficient to resist the flow of electricity before a given threshold voltage of between about 8 volts and about 15 volts is applied thereto.

4,380,750

INDIUM OXIDE RESISTOR INKS

Ashok N. Prabhu, Plainsboro, and Kenneth W. Hang, Princeton Junction, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jul. 6, 1981, Ser. No. 280,934
Int. Cl.³ H01C *1/012;* B05D *5/12;* H01B *1/08;* C09D *11/00*
U.S. Cl. 338—308 10 Claims

1. A resistor ink suitable for forming a resistor film on a circuit board comprising:

(a) from about 25 to about 80 percent by weight of indium oxide;

(b) from about 1 to about 20 percent by weight of magnesium oxide;

(c) from about 5 to about 60 percent by weight of a barium calcium borosilicate glass frit; and

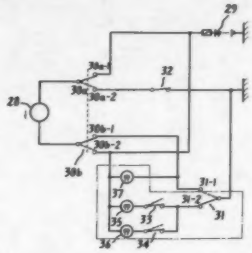
(d) from about 10 to about 35 percent by weight of a suitable organic vehicle.

4,380,751

WARNING SYSTEM FOR PASSIVE VEHICLE OCCUPANT RESTRAINT BELTS

Juichiro Takada, 3-12-1, Shinmachi, Setagayaku, Takyoto, Japan

Filed Nov. 25, 1980, Ser. No. 210,152
Claims priority, application Japan, Nov. 30, 1979, 54-164948[U]
Int. Cl.³ B60R *21/02, 21/10*
U.S. Cl. 340—52 E 7 Claims



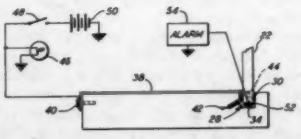
1. A passive vehicle occupant seat belt system comprising a shoulder belt extending upwardly and outwardly across the vehicle seat from adjacent the inboard lower rear portion of the seat, a guide rail affixed to the edge of the vehicle roof generally above the door, a movable anchor received by the guide rail for movement between a restraint location adjacent the rear end of the guide rail and a release location adjacent the front end of the guide rail, means for moving the movable anchor between the release and restraint locations in response to closing and opening of the vehicle door, emergency release buckle means for releasably connecting the outboard end of the shoulder belt to the movable anchor, a fixed anchor adjacent the restraint location of the movable anchor and including a locking pawl adapted to lock the movable anchor at the restraint location, means for detecting the presence of the movable anchor at the restraint location and for producing a warning signal when the movable anchor is not at the restraint location, means for detecting when the pawl is disengaged from the movable anchor and for producing a warning signal thereof only when the movable anchor is at the restraining location, and means for detecting when the buckle is not fastened and for producing a warning signal indicative thereof only when the movable anchor is at the restraining location.

4,380,752

AUTOMATIC TRANSMISSION SELECTOR LEVER LOCK

Carlton J. Reynolds, R.D. 1, Coal Hill Rd., North Bangor, N.Y. 12966

Filed Feb. 9, 1981, Ser. No. 232,453
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—52 D 12 Claims



9. Apparatus for releasably locking a transmission selector lever in the "park" position and for signaling to indicate that the lever is not in the "park" position in response to a predetermined vehicular condition, said apparatus comprising, in combination:

(a) an electrical power source;
(b) a first electrical switch which is closed in response to movement of a first vehicle part;
(c) a locking device having two elements respectively mounted on second and third vehicle parts which are moved relative to one another in response to movement of the transmission selector lever;
(d) said two elements being constructed and arranged for movement into locking engagement to prevent further relative movement of said second and third vehicle parts, and thereby of said selector lever, upon movement of the latter to the "park" position;
(e) said two elements having electrically conducting portions which remain in contact when said selector lever is in other than the "park" position and which are removed from contact when said lever is placed in the "park" position;
(f) said electrically conducting portions forming a second electrical switch wired in series with said first switch; and
(g) an electrically actuated signaling device connected to said first and second switches and to said power source for actuation only when both of said switches are closed.

4,380,753

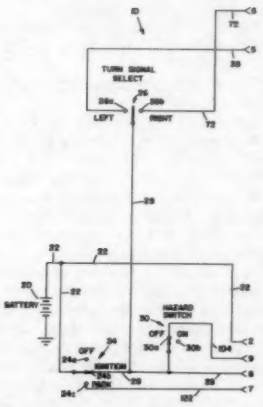
TURN SIGNAL AND HAZARD SIGNAL CONTROL CIRCUIT

LeRoy A. Gant, 521 Jasmine La., Santa Maria, Calif. 93454

Division of Ser. No. 95,549, Nov. 19, 1979, Pat. No. 4,302,748. This application Jun. 19, 1981, Ser. No. 275,544

Int. Cl.³ B60Q *1/00, 1/40, 1/46*

U.S. Cl. 340—66 **2 Claims**



1. An electronic control circuit for controlling left and right turn signal lamps of a vehicle, comprising:
(a) an ignition switch having an off position, an ignition position and a park position;
(b) means for supplying electrical power through said ignition switch when said switch is in said ignition position or said park position;
(c) means for flashing the left turn signal lamp and the right turn signal lamp on and off simultaneously in response to the electrical power; and
(d) two-state hazard switch means, connected to said ignition position of said ignition switch, for activating said flashing means when said ignition switch is in said ignition position dependent on the state of said hazard switch means and for automatically activating said flashing means when said ignition switch is in said park position independent of the state of said hazard switch means.

4,380,754

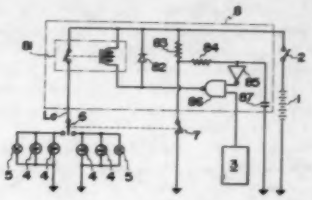
ELECTRIC INDICATOR UTILIZING AN OSCILLATION SOURCE OF A CRYSTAL CLOCK FOR AUTOMOBILES

Akio Simizu, Tonemachi, Japan, assignor to Niles Parts Co., Ltd., Tokyo, Japan

Filed Jan. 19, 1978, Ser. No. 870,805

Int. Cl.³ B60Q *1/34*

U.S. Cl. 340—73 **7 Claims**



1. An electronic turn indicator for automobiles utilizing an oscillation of a crystal clock comprising:
an oscillation source of a crystal clock providing a continuously alternating output signal, a selectively operable amplification circuit operable when enabled to amplify the output signal from said oscillation source of said crystal clock to thereby provide an amplified power signal to an output of said amplification circuit, said amplification circuit including enable logic means including an AND GATE having a signal input connected to receive the output signal from said oscillation source and an enable input for receiving an enable signal and having a plurality of resettable cascaded frequency divider means for dividing the output of said oscillation source, said amplification circuit disabled from amplification and said plural frequency divider means each held in a reset state in the absence of an enable signal, said amplification circuit, when enabled by an enable signal applied to said enable input, releasing simultaneously said plural frequency divider means from their reset state to effect frequency division of the output of said oscillation source and providing the so-divided amplified power signal to the output of said amplification circuit, the alternations of the frequency divided amplified power signal synchronized to the output of said oscillation source, a turn indication lamp, a turn indicator switch for selectively connecting the output of said amplification circuit to said turn indication lamp to energize said lamp intermittently, and circuit means for applying an enable signal to said enable input of said logic means to enable said amplification circuit and to release simultaneously said plural frequency divider means from said reset state only when said turn indicator switch connects the output of said amplification circuit to said indication lamp so that said turn indication lamp is energized within one cycle of the output of said oscillation source after actuation of said turn indicator switch.

4,380,755

MONOLITHICALLY INTEGRATED TWO-DIMENSIONAL IMAGE SENSOR WITH A DIFFERENCE FORMING STAGE

Frank Endlicher, Munich, and Rudolf Koch, Germering, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 30, 1980, Ser. No. 164,300

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1979, 2939490

Int. Cl.³ H04N *5/30*

U.S. Cl. 382—68 **8 Claims**

1. A monolithically integrated two-dimensional image sensor having a difference-forming stage, said image sensor hav-

ing a plurality of sensor elements disposed in rows and columns on a doped semiconductor body, with all sensor elements in a column being connected to a common column line selectively connectable to a reference potential, and with all sensor elements in a row being connected to a common row line connected to a means for selectively energizing all sensor elements in a row for collection of radiation incident on said sensor elements, said difference-forming stage comprising:

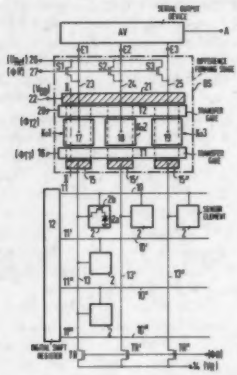
a plurality of first oppositely doped regions in said semiconductor body respectively connected to said column lines for generating a charge packet corresponding to respective voltages on said column lines;

a plurality of storage capacitors formed by respective electrodes disposed above an insulating layer on said semiconductor body, each column line having a storage capacitor associated therewith;

a first transfer gate having a clock pulse voltage connected thereto disposed on said insulating layer on said semiconductor body between said first oppositely doped regions and said storage capacitors;

a second oppositely doped region in said semiconductor body connected to a supply voltage;

a second transfer gate disposed on said insulating layer on said semiconductor body between said storage capacitors



and said second oppositely doped region, said second transfer gate connected to a clock pulse voltage;

a reset means for resetting said electrodes of said storage capacitors to a reference potential after a readout operation; and

a serial output device having a plurality of inputs respectively connected to said electrodes of said storage capacitors for sequentially reading out signals from said electrodes,

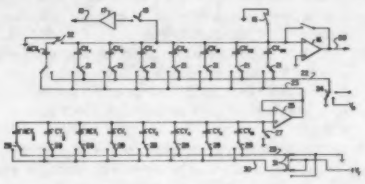
whereby first charge packets are generated in said first oppositely doped regions during a first readout of said sensor elements and said first charge packets are transferred by said first transfer gate into said storage capacitors while the electrodes of these are at said reference potential, the storage capacitors being subsequently disconnected from the reference potential and the first charge packets being transferred then into said second oppositely doped region by said second transfer gate, and whereby second charge packets are generated in said oppositely doped regions by a second readout of said sensor elements and are transferred into said storage capacitors and the voltage of said electrodes of said capacitors corresponding to the difference between said first and second charge packets is subsequently output by said serial output device and said second charge packets are subsequently transferred into said second oppositely doped region by said second transfer gate.

4,380,756

CHARGE REDISTRIBUTION CIRCUIT HAVING REDUCED AREA

Adrian D. Worsman, Swindon, England, assignor to Mitel Corporation, Kanata, Canada

Filed Dec. 22, 1980, Ser. No. 219,110
Claims priority, application Canada, Aug. 27, 1980, 359106
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 AD **9 Claims**



1. A charge redistribution circuit for translation of an input signal comprising:

(a) a first plurality of capacitors, one terminal of each capacitor being connected together,

(b) means for switching said one terminal to a first reference voltage,

(c) means for selectively switching the other terminal of each capacitor between a first lead and a second lead,

(d) means for selectively switching the first lead between a source of said input signal, said first reference voltage, and a high impedance,

(e) a second plurality of capacitors, one terminal of each capacitor being connected together,

(f) a buffer having its input connected to said one terminal of the second plurality of capacitors, and its output connected to said second lead,

(g) means for switching the input of the buffer to said first reference voltage,

(h) means for selectively switching the other terminal of each of the second plurality of capacitors to a third or a fourth lead,

(i) means for switching the third and fourth leads interchangeably to the first reference voltage and to a second reference voltage having a single polarity with respect to said first reference voltage,

whereby upon switching of sequences of said other terminal of capacitors of the first plurality of capacitors between the first and second leads, a distribution of charge is effected therebetween, and upon switching of sequences of said other terminal of capacitors of the second plurality of capacitors between the third and fourth leads a distribution of charge is effected therebetween, and

(j) output means for carrying an output signal from said one terminal of the first plurality of capacitors, resulting from the distribution of charge between the first capacitors and the distribution of charge between the second capacitors.

4,380,757

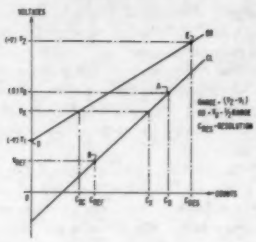
DATA ACQUISITION SYSTEM AND ANALOG TO DIGITAL CONVERTER THEREFOR

Gyorgy I. Vancsa, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 116,053, Jan. 28, 1980, Pat. No. 4,349,821.
This application Dec. 9, 1981, Ser. No. 328,888
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 CC **2 Claims**

1. A method of deriving through a channel of communication including an anlog-to-digital (A/D) converter, a corrected value C_{XC} applicable to any count C_X derived from said (A/D) converter through said channel of communication in relation to an analog input signal of magnitude V_X applied from at least one measuring point, comprising the steps of:

(1) applying a bias voltage V_B at the input of said channel of communication and deriving a count C_B at the output of said A/D converter;
(2) applying a known voltage reference V_{REF} at the input of said channel of communication and deriving a count C_{REF} at the output of said A/D converter;



(3) applying the analog input signal of magnitude V_X of the measuring point and deriving a count C_X at the output of said A/D converter;
(4) computing C_{XC} with the formula:

$$C_{XC} = \frac{RES}{\text{Range}} \left[\frac{(V_B - V_{REF})}{(C_B - C_{REF})} \times (C_X - C_B) \right] + \frac{RES}{2}$$

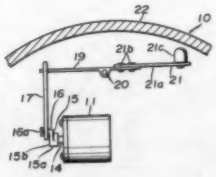
where "RES" is the Resolution C_{RES} of measurement and "Range" is the spread of the input signal V_X in magnitude; the deriving steps (1) and (2) of counts C_B and C_{REF} being refreshed from applied voltages V_B and V_{REF} from time to time before deriving counts C_X and computing C_{XC} under steps (3) and (4).

4,380,758

MOTOR ACTUATED BELL

Tadashi Ishii, Tokyo, Japan, assignor to Kobishi Electric Co., Ltd., Tokyo, Japan

Filed Jul. 10, 1980, Ser. No. 168,405
Int. Cl.³ G08B 3/10; G10K 1/064
U.S. Cl. 340—396 **1 Claim**



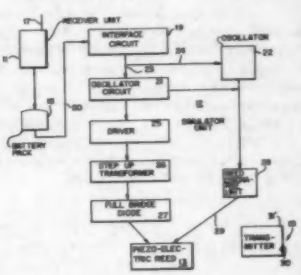
1. A motor actuated bell which comprises:
(a) a gong;
(b) a base mounted with said gong;
(c) a motor mounted on said base and having a rotatable drive shaft;
(d) a crank member fixedly secured to said motor drive shaft for rotation therewith, said crank member having an eccentric pin extending away from said motor in eccentric relation to the axis of said motor drive shaft;
(e) a rectangular connecting plate disposed generally in parallel relation to said base and lying in a plane generally perpendicular to the axis of said eccentric pin, said connecting plate having a slot formed therethrough at one end thereof and extending perpendicular to the longitudinal axis thereof, and said eccentric pin being received in said slot for sliding movement therealong, whereby said connecting plate is reciprocally moved along its axis through said eccentric pin upon rotation of said motor drive shaft;
(f) a rigid lever pivotally mounted on said base intermediate opposite ends thereof, said lever being fixedly secured at one end thereof generally perpendicularly to the other end of said connecting plate for swinging movement in parallel spaced relation to said base; and
(g) a hammer means having a hammer element for striking against the inner wall of said gong, said hammer means having a leaf spring fixedly secured at one end thereof to the other end of said lever and extending therefrom along the axis of said lever, and said leaf spring carrying said hammer element at the other end thereof.

4,380,759

APPARATUS TO ALERT A DEAF PERSON

Jerome Sulkoski, 7258 Bell Rd., Harborcreek, Pa. 16511, and Richard D. Brugger, 5433 Clinton Dr., Erie, Pa. 16509

Filed Nov. 5, 1980, Ser. No. 204,089
Int. Cl.³ H04B 1/08; G08B 21/00
U.S. Cl. 340—407 **7 Claims**

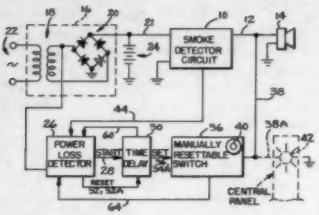


1. Apparatus to alert a deaf person of an emergency situation comprising:
a vibration sensor for sensing an audible alarm,
a radio receiver,
a radio transmitter having a vibration pickup adapted to sense the vibration of a smoke alarm,
said radio receiver having means to receive transmissions from said transmitter,
a tactile stimulator connected to said receiver,
said tactile stimulator being adapted to be disposed in engagement with the skin of a person whereby said person is alerted by a transmission from said transmitter to said receiver and to said tactile stimulator when said smoke alarm is operating,
said tactile stimulator being a piezoelectric reed connected to a skin engaging member terminating in an end that is substantially a conical member having a point adapted to vibrate at a frequency in the range of 160 HZ,
said piezoelectric reed comprises a conductor member sandwiched between two relatively thin non-conductor members supported in fixed position at a first end and having said point member supported on its distal end, and adapted to vibrate in contact with said skin in response to a signal received by said receiver from said transmitter.

4,380,760
SMOKE DETECTOR WITH DELAYED ALARM AFTER CHANGE TO STAND-BY POWER

Morris J. Kornblit, Pittsburgh, Pa., assignor to General Electric Company, New York, N.Y.

Continuation-in-part of Ser. No. 123,274, Feb. 21, 1980, abandoned. This application Mar. 26, 1981, Ser. No. 247,878
Int. Cl.³ G08B *17/10, 1/08*
U.S. Cl. 340—628 **11 Claims**

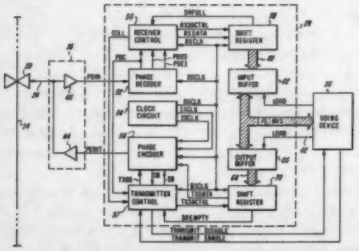


1. A smoke detector apparatus including:
means for receiving energizing power from a first power source,
a stand-by power source automatically operable to supply power to said apparatus upon failure of said first power source,
a first switching means connected to said means for receiving energizing power and operable upon failure of the first power source,
a time delay means connected to be triggered on by said first switching means upon failure of said first power source,
a second switching means connected to be triggered on by said time delay means at the end of the time delay period,
a signal means connected for energization by said second switching means at the end of the time delay period, and
reset means connected to said means for receiving energizing power and operable upon reestablishment of power from the first power source prior to the timing out of said time delay means to reset said time delay means to prevent the energization of said signal means.

4,380,761
DIGITAL PHASE DECODER WITH COLLISION DETECTION

David R. Boggs, Palo Alto, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 4, 1980, Ser. No. 118,262
Int. Cl.³ H04Q *9/00*
U.S. Cl. 340—825.5 **8 Claims**

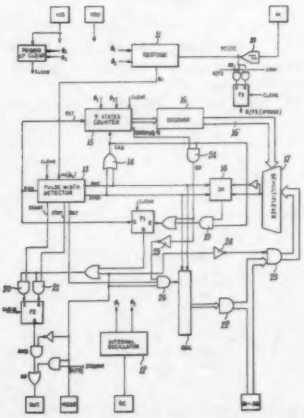


1. A digital phase decoder for receiving and decoding phase encoded data transmitted as a plurality of bitcells, each of a predetermined time period, with a predetermined number of said bitcells representing a packet comprising
means for synchronizing received phase encoded data with the frequency of a predetermined clock signal having a rate exceeding the frequency of said bitcells,
means coupled to the output of said synchronizing means for developing a pair of output signals respectively indicative of a transitional change of a binary state of said received data,
means coupled to said developing means for generating a decode signal representative of one of several conditions due to a transitional change, said conditions being indicative of either a data transition from a low state to a high state or a data transition from a high state to a low state or an illegal transition treated as a data collision,
means for counting the number of clock intervals of said predetermined clock signal under the control of said generating means,
said generating means monitoring said counter means to ascertain relative to each bitcell period where a transitional change has occurred in relation therewith, the point of occurrence indicative of one of said several conditions.

4,380,762
POLYFUNCTION PROGRAMMABLE DATA RECEIVER

Gaetano Capasso, Ottaviano, Napu, Italy

Continuation of Ser. No. 117,317, Jan. 31, 1980, abandoned. This application Feb. 20, 1981, Ser. No. 236,367
Int. Cl.³ G08C *19/22*
U.S. Cl. 340—825.63 **9 Claims**

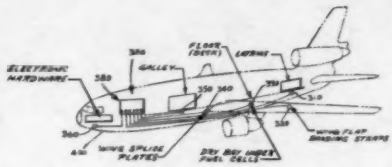


1. A programmable polyfunction data receiver comprising means for receiving a sequence of serial data signals followed by a control signal; pulse length analyzer means for detecting said signals; mode selection circuit means for controlling operation of said receiver in an input data validation mode or in a serial/parallel data conversion mode; bidirectional bus means for setting up a digital word to be identified or for providing in parallel the data of said sequence according to the state of said mode selection circuit; means for providing an output signal if the comparison validates said serial sequence and said set up digital word when the receiver operates as identifier, and for providing an enabling signal when the receiver operates as a series/parallel converter.

4,380,763
CORROSION MONITORING SYSTEM

Leland L. Peart, Sedona, Ariz., and John Farrar, Santa Ana, Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 6, 1981, Ser. No. 222,845
Int. Cl.³ G01N *27/46*; G08G *19/16*
U.S. Cl. 340—870.16 **6 Claims**



1. A corrosion monitoring system, comprising:

a. means for sensing galvanic corrosion, with said means disposed in an environment where galvanic corrosion of preselected metals is to be monitored, whereby when galvanic corrosion is sensed an amount of galvanic current flows from said means, wherein said means includes a sensor head device which further includes a galvanic couple made of metals identical to said preselected metals to be monitored for galvanic conversion, with said couple coiled in the shape of a spiral and potted in a housing made of electrically insulating material; and

b. means, in electrical connection with said galvanic corrosion sensing means, for amplifying, integrating, and storing in a non-volatile memory for recalling and displaying said amount of galvanic current that is flowing and has flowed from said galvanic corrosion sensing means, wherein said amplifying, integrating, and storing means includes:

(1) amplifier means in electrical connection with said galvanic corrosion sensing means;

(1) integrator means in electrical connection with said amplifier means;

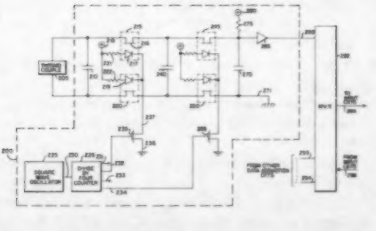
(3) non-volatile memory means in electrical connection with said integrator means, wherein this means includes a bubble memory component; and

(4) digital display means in electrical connection with said non-volatile memory means.

4,380,764
DATA ACQUISITION APPARATUS

Stephen A. Connors, Tewksbury, Mass., assignor to Data Translation, Inc., Marlboro, Mass.

Filed Mar. 12, 1981, Ser. No. 242,840
Int. Cl.³ H04J *3/02*; H04Q *7/00*; G01R *11/52*
U.S. Cl. 340—870.37 **14 Claims**



1. Data acquisition apparatus for transferring signals produced by a sensing element to input circuitry while maintaining electrical isolation between said sensing element and said input circuitry, said data acquisition apparatus comprising:

first means for temporarily storing said signals,

second means for temporarily storing said signals,

first means operable to transfer signals from said sensing element to said first storage means,

second means operable to transfer signals from said first storage means to second storage means,

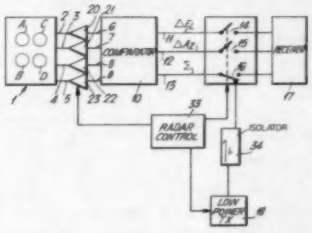
means for alternately operating said first transferring means and said second transferring means in a continuous sequence and,

third means responsive to control signals produced by said input circuitry for selectively transferring signals stored in said second storage means to said input circuitry.

4,380,765
RADAR SYSTEMS

Michael F. Godfrey, St. Albans, and David Lynam, Bushey, both of England, assignors to The Marconi Company, Ltd., Chelmsford, England

Filed May 3, 1978, Ser. No. 903,702
Claims priority, application United Kingdom, May 4, 1977, 18751/77
Int. Cl.³ G01S *13/44*
U.S. Cl. 343—16 M **9 Claims**



1. A radar system comprising a multi-channel transmit/-receiver aerial system, comparator means for providing sum and difference channels for target detection, a low power radar transmitter, means for coupling said radar transmitter into the sum channel, a radar receiver, means for coupling said sum and difference channels to the radar receiver, amplifying means individual to each of the aerial channels, said amplifying means being controllable to provide high gain in the transmitting direction and negligible loss in the receiving direction, and control means for switching said amplifying means, said means for coupling said transmitter, and said means for coupling said receiver, in accordance with pulsed operation of the radar system.

4,380,766
MULTI-CHANNEL AMPLIFIER APPARATUS

Rolf Bächtiger, Oberwill, Switzerland, assignor to Siemens-Albis AG, Zurich, Switzerland

Continuation of Ser. No. 97,318, Nov. 26, 1979, abandoned. This application Aug. 3, 1981, Ser. No. 289,501
Claims priority, application Switzerland, Dec. 15, 1978, 12778/78; Aug. 24, 1979, 7708/79
Int. Cl.³ G01S *7/02*; H03K *17/00*
U.S. Cl. 343—5 SW **7 Claims**

1. A multi-channel amplifier apparatus for oscillation packets, comprising:

an amplifier having an input and an output;

input and output delay line means;

input switches and output switches;

the input delay line means being formed by at least one primary electro-acoustical multiple delay line having a receiver transducer and a plurality of transmitter transducers;

said transducers being contained on a crystal substrate;

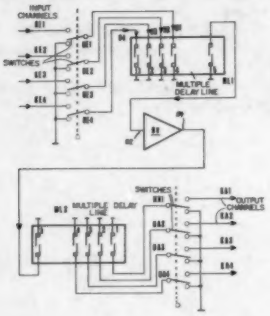
said amplifier further being connected at its input with the receiver transducer of the primary multiple delay line;

a plurality of input channels connected with a respective transmitter transducer of the primary multiple delay line;

each of said input channels being capable of being connected via a related input switch with correlated outputs of a radar front-end simultaneously delivering sporadic oscillation packets to be transmitted over the multi-channel amplifier apparatus;

said input switches insuring that said electro-acoustical transmitter transducers are always collectively short-circuited with a reference potential or earth when the oscillation packets are not present;

the output delay line means being formed by at least one secondary electro-acoustical multiple delay line having a transmitter transducer and a plurality of receiver transducers;



said transducers being contained on a crystal substrate;

said amplifier further being connected at its output with the transmitter transducer of the secondary multiple delay line;

a plurality of output channels connected with a respective receiver transducer of the secondary multiple delay line;

each of said output channels being capable of being connected via a related output switch with correlated inputs of a signal processor receiving the sporadic oscillation packets simultaneously transmitted over the multi-channel amplifier apparatus; and

said output switches insuring that said electro-acoustical receiver transducers are collectively always short-circuited with a reference potential or earth when the oscillation packets are not present.

4,380,767

CONTROLLED ANTENNA TUNER

Kenneth Goldstein, and Claude A. Sharpe, both of Plano, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 27, 1980, Ser. No. 200,833
Int. Cl.³ H04B *17/00*
U.S. Cl. 343—745 **10 Claims**

1. An antenna tuner comprising:

a. a transceiver and an antenna

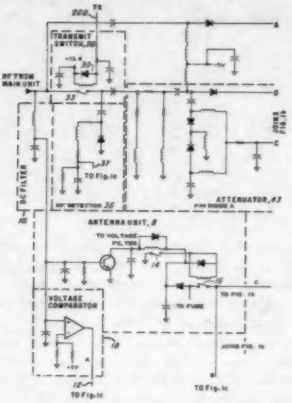
b. an antenna coupler circuit interconnecting the antenna to the transceiver said circuit including a

capacitance and inductance network means for selectively loading the antenna;

c. phase bridge means for comparing the transmitter power and antenna power for producing selectively an inductive and capacitive antenna indicating signal;

d. magnitude impedance bridge means for comparing the transmitter power and antenna power for producing selectively a signal indicative of a load resistance greater than and less than the characteristic impedance of the antenna; and

e. computer controller means connected to the means for determining whether an antenna is inductive or capacitive, and to the means for determining whether the load resistance is greater than or less than the characteristic impedance of the antenna and to the capacitance and inductance means for tuning the antenna by selectively



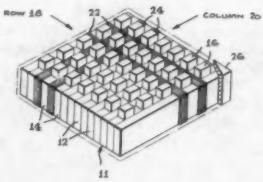
coupling capacitance and inductance into the antenna coupler circuit responsive to inductive or capacitive indicating signals and load resistance greater than or less than the characteristic impedance of the antenna indicating signals.

4,380,768

MAGNETIC PRINTER AND PRINTHEAD

Gaston Palombo, Agoura, and Stephen M. Fortescue, Northridge, both of Calif., assignors to Dataproducts Corporation, Woodland Hills, Calif.

Filed Aug. 4, 1980, Ser. No. 174,815
Int. Cl.³ G01D *15/12*
U.S. Cl. 346—74.5 **14 Claims**



1. A printhead module for perpendicular magnetic printing comprising:

a magnetizable base having a matrix of a plurality of columns and a plurality of rows of protrusions extending upward from the base;

a plurality of first conductors, each extending between adjacent columns of said matrix; and a plurality of second conductors, each extending between adjacent rows of said matrix, whereby each protrusion within the interior of said matrix is surrounded by two of said first conductors and two of said second conductors, wherein in recording a selected one of the protrusions functions as a recording pole and protrusions surrounding the selected protrusion together function as a flux closing pole.

4,380,769

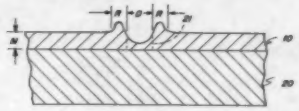
ELEMENT FOR RECORDING BY THERMAL DEFORMATION

Harold T. Thomas, and Joseph J. Wrobel, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 23,434, Mar. 23, 1979, abandoned, which is a continuation-in-part of Ser. No. 862,069, Dec. 19, 1977, abandoned. This application Sep. 5, 1980, Ser. No. 184,554

Int. Cl.³ G01D *15/34*

U.S. Cl. 346—135.1 30 Claims



1. A recording element comprising a support having thereon a recording layer of an amorphous material having a signal-to-noise ratio of at least 40 decibels and comprising a mixture of a dye and a binder wherein:

(a) said amorphous material has an absorption factor of at least about 20 at a first wavelength and is substantially transparent at a second wavelength wherein the absorption factor is a product of the weight fraction of dye included in the amorphous material and the molar extinction coefficient of the dye at the wavelength of a recording beam of choice (ϵ_λ), divided by the molecular weight of the dye (MW), and having the units of liter per gm-cm;

(b) said amorphous material is capable of being thermally deformed by a beam of high energy-density radiation of said first wavelength to form a deformation comprising a hole or depression surrounded by a sharply defined ridge, wherein the width of the ridge is less than or equal to the breadth of the hole or depression, as measured in the plane of the undeformed outer surface of the layer and in the direction of the relative motion, if any, between the recording beam and the layer, which deformation represents encoded information capable of being detected by a beam of high energy-density radiation of said second wavelength.

4,380,770

INK JET PRINTER

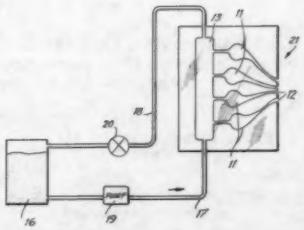
Mitsuaki Maruyama, Shiojiri, Japan, assignor to Epson Corporation and Kabushiki Kaisha Suwa Seikosha, both of, Japan

Filed Nov. 20, 1980, Ser. No. 208,743

Claims priority, application Japan, Nov. 22, 1979, 54-151823

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—140 R 18 Claims



1. An ink jet printer comprising:

a printer head including a substrate, a vibration plate, at least one pressure chamber and nozzle formed by providing a gap between said substrate and said vibration plate, each said pressure chamber being connected to one of said ink nozzles;

ink tank means for containing ink for printing;

a reservoir having an inlet and an outlet each said pressure chamber being connected by a channel to said reservoir for receiving ink from said reservoir, said ink reservoir having a low hydraulic resistance to fluid flow from said inlet to said outlet relative to the hydraulic flow resistance through said pressure chambers, channels and nozzles;

first tube means for connecting said ink tank means to said printer head inlet;

second tube means for connecting said printer head outlet to said ink tank means, ink flowing from said ink tank means passing through said ink reservoir from said inlet to said outlet to expel gas bubbles and return to said ink tank means without loss of ink.

4,380,771

INK JET RECORDING PROCESS AND AN APPARATUS THEREFOR

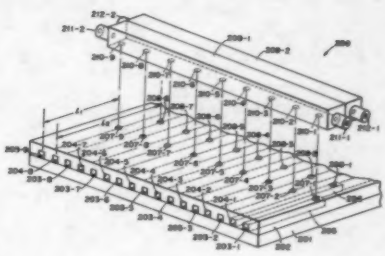
Yasushi Takatori, Sagamihara, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 23, 1981, Ser. No. 276,673

Claims priority, application Japan, Jun. 27, 1980, 55-87461; Jun. 27, 1980, 55-87462; Jun. 27, 1980, 55-87464; Jun. 27, 1980, 55-87465; Jun. 27, 1980, 55-87466; Jun. 27, 1980, 55-87469

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—140 R 8 Claims



1. An ink jet recording process carrying out color printing by using plural inks of various colors and an ink jet recording head which comprises: plural orifices for each of color inks; common liquid chambers, each chamber being common to said orifices for the same color ink; and a plurality of long and thin liquid chambers communicative with said orifices, said each common chamber corresponding to the plural orifices possessing means for forming flying ink droplets, length of the liquid chamber varying for different color inks, characterized in that printing is carried out by using plural color inks, each having an adjusted viscosity so that the loss of head in-friction inside the liquid chamber is substantially equal with regard to each of color inks.

4,380,772

LOW INK INDICATION FOR INK JET PRINT HEAD

Victor J. Italiano, Ithaca, N.Y., assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 24, 1981, Ser. No. 334,106

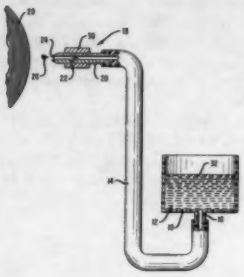
Int. Cl.³ G01D *18/00*

U.S. Cl. 346—140 R 16 Claims

1. Means for indicating low ink supply comprising:

means containing a supply of ink,

means operably associated with said ink supply means for ejecting ink in droplet form onto record media, and a



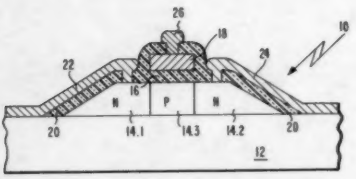
liquid placed on the surface of said supply of ink and different in color therefrom and visually observed on said record media when said ink supply is exhausted.

4,380,773

SELF ALIGNED ALUMINUM POLYCRYSTALLINE SILICON CONTACT

Alvin M. Goodman, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,345
Int. Cl.³ H01L 29/78, 23/52, 21/285, 29/04
U.S. Cl. 357—23 11 Claims



1. In a semiconductor device having a pair of active regions of a first conductivity type embedded in a body of semiconductor material of a second conductivity type at the surface of the body; a channel region in the semiconductor body, at the surface thereof, separating the active regions; a gate member aligned with the channel region and separated from the semiconductor body by a layer of insulating material and contact means in ohmic contact with each of the active regions and the gate member respectively, the gate member comprising:

a conductive layer of oxygen doped polycrystalline silicon.

4,380,774

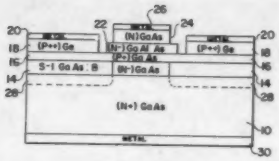
HIGH-PERFORMANCE BIPOLAR MICROWAVE TRANSISTOR

Nax N. Yoder, Falls Church, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 19, 1980, Ser. No. 217,977
Int. Cl.³ H01L 29/161, 29/72, 29/12
U.S. Cl. 357—34 4 Claims

1. An improved bipolar transistor of the type having a collector layer lying on one side of a substrate and an ohmic contact lying on the other side thereof, a base layer lying on the collector layer, an emitter structure including a tunnel barrier layer lying on a center region of the base layer, an emitter layer lying on the tunnel barrier layer and another ohmic contact lying on the emitter layer, and a base contact structure including a contact layer lying on outer regions of the base layer and a metal layer lying on the contact layer, the emitter and base contact structures being spaced from each other, wherein the improvement comprises:

forming a semi-insulative region in the collector layer underlying the base contact structure, so that the region



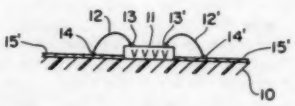
through which charge carriers travel from the emitter structure through the base layer into the collector layer is restricted substantially to the center region of the base layer underlying the tunnel barrier layer of the emitter structure.

4,380,775

SEMICONDUCTOR UNIT WITH CONNECTING WIRES

Albrecht Bischoff, Bruchköbel, Fed. Rep. of Germany, assignor to W. C. Heraeus GmbH, Hanau, Fed. Rep. of Germany

Filed Jul. 11, 1980, Ser. No. 168,634
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1979, 2929623
Int. Cl.³ H01L 23/48, 29/46, 29/62
U.S. Cl. 357—67 8 Claims



1. A semiconductor unit comprising

a semiconductor chip (11);

a connecting frame (15, 15');

and means connecting selected zones of the semiconductor chip to the frame comprising, in accordance with the invention,

connecting lead wires consisting of a homogeneous aluminum-copper alloy, having a thickness of between about 0.01 mm to 0.06 mm, and in which the aluminum alloy consists essentially of 3 to 5% copper, the balance aluminum, by weight.

4,380,776

IMAGE POSITIONING APPARATUS

David L. Smith, and Gerald E. O'Brien, both of Atlanta, Ga., assignors to Computer Microfilm International Corporation, Atlanta, Ga.

Continuation of Ser. No. 895,154, Apr. 10, 1978. This application Feb. 4, 1980, Ser. No. 118,443
Int. Cl.³ H04N 7/18
U.S. Cl. 358—102 10 Claims

1. Automatic film positioning and scanning apparatus, responsive to supplied address signals representative of the location of an information image on a film, including a plurality of image frames each having a marker image, at least one of said frames comprising a reference frame and having only said marker image, comprising:

image illuminating and detecting means, responsive to supplied horizontal and vertical deflection signals, for generating a video signal representative of an image in an operative position with respect to said detecting means;

mechanical positioning means, responsive to position control signals, for moving portions of said film into said operating position;

a deflection signal generator, responsive to supplied deflection timing signals and raster position signals for generating said horizontal and vertical deflection signals;

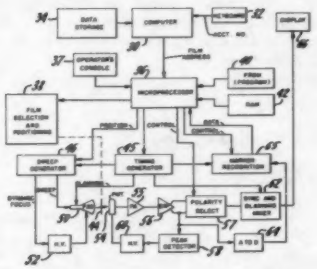
means for generating said deflection timing signals;

an analog to digital converter for digitizing said video signal to form a digitized video signal;

means, responsive to said deflection timing signals and said digitized video signals, for generating marker position signals representative of the timing of marker representative portions of said digitized video signals with respect to said deflection timing signals;

and data processing means, including a control program, for:

(a) generating first position control signals to cause said positioning means to position said reference frame in said operative position;



(b) generating second position control signals, in accordance with said address signals, to position a selected frame in said operative position;

(c) generating nominal raster position signals;

(d) generating first raster position signals in response to said marker position signals when said reference frame is in said operative position and said nominal raster position signals are supplied to said deflection signal generator;

(e) generating second raster position signals in response to said marker position signals when said selected frame is in said operative position and said first raster position signals are supplied to said deflection signal generator;

said first and second raster position signals being computed from the deviation of said marker position signals from ideal marker position signals;

whereby said deflection signal generator can generate horizontal and vertical deflection signals using said second raster position signals and cause said image detecting means to generate a video signal representative of an image frame corresponding to said address signals.

4,380,777

KEYED AGC CIRCUIT FOR VIDEO DATA TRANSMITTING DEVICE

Fumio Miyao, Kanagawa, and Kazumi Tsukioka, Nagano, both of Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

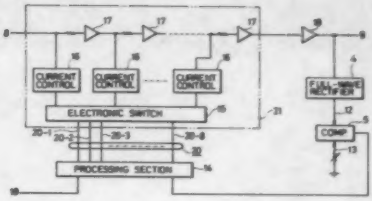
Filed Dec. 15, 1980, Ser. No. 216,703

Claims priority, application Japan, Dec. 18, 1979, 54/163593

Int. Cl.³ H04N 5/52

U.S. Cl. 358—178 **5 Claims**

1. A keyed AGC circuit for a video data transmitting device comprising: a process circuit for carrying out a digital process to determine whether a synchronizing signal level at an output terminal thereof is higher than or lower than a reference level; and a multi-stage digital attenuator coupled to be controlled in response to an output of said processing circuit, said processing circuit comprising means for setting an attenuation level of said



attenuator in a plurality of successive steps in accordance with said synchronizing signal level.

4,380,778

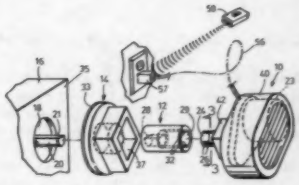
CONTROL ASSEMBLY FOR REMOTE SWITCHING

Manohar A. Singh, and Manohar Mudhar, both of 162 Spadina Rd., #201, Toronto, Ontario, Canada (M5R 2T8)

Filed May 5, 1981, Ser. No. 260,712

Int. Cl.³ H04N 5/44; H03J 9/04

U.S. Cl. 358—194.1 **8 Claims**



1. For use with an appliance having an operating shaft with a non-circular end section, a control assembly comprising:

a drive means having a low-speed, high-torque output shaft,

a coupling member having a first opening complementary to said non-circular end section and adapted to receive the operating shaft, and having a second opening aligned with the first, the second opening and said output shaft being engagable to provide a lost-motion connection that allows the output shaft to engage the second opening over an angular range while still allowing the output shaft to engage and drive the coupling member,

mounting means for mounting the drive means non-rotatively on the appliance,

said output shaft being cylindrical with two diametrally opposed longitudinal splines projecting therefrom, the said second opening being circular in section with a diameter greater than the distance between said tops of the splines, and having two inwardly projecting longitudinal ribs sized so as to have mechanical interference with said splines when the output shaft is rotated within said second opening sufficiently far to bring the ribs into contact with the splines.

4,380,779

METHOD FOR RECORDING MULTIPLEXED SIGNALS ON METAL EVAPORATED TAPE

Sadafumi Kitamura, Neyagawa, and Hiroshi Taniguchi, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 23, 1981, Ser. No. 246,317

Claims priority, application Japan, Mar. 25, 1980, 55-38447

Int. Cl.³ H04N 9/491; H03F 1/00; H03G 3/20, 5/16

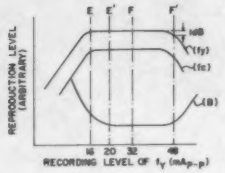
U.S. Cl. 358—330 **6 Claims**

1. A magnetic recording method for recording a multiplex

signal comprising two principal signals, comprising the steps of:

using a magnetic recording medium having a magnetic layer with the thickness which is smaller than a recorded wavelength of each of said two principal signals;

recording one of said principal signals having a higher frequency than that of the other signal at a current which is



more than 2 dB greater than the lower limit of the recording current with which a reproduced output level is saturated, and which is smaller than a current with which the reproduced output level is reduced by 1 dB beyond said saturated condition; and

recording said other principal signal of a lower frequency at a current which is smaller than one half of that of said signal of a higher frequency.

4,380,780

DISC-SHAPED RECORDING MEDIUM REPRODUCING APPARATUS

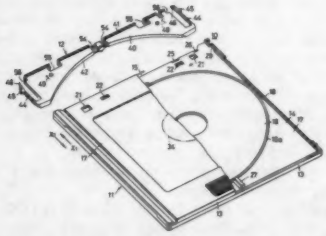
Atsumi Hirata, Fujisawa; Osamu Tajima, Ayase; Isami Kaneda, Yokohama; Hiroyuki Sugiyama, Isehara; Takashi Saito, Yokohama, and Masafumi Mochizuki, Yamato, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Mar. 13, 1981, Ser. No. 243,438

Claims priority, application Japan, Mar. 14, 1980, 55/32542

Int. Cl.³ G11B *5/012, 5/016, 23/02, 5/52*

U.S. Cl. 360—97 **7 Claims**



1. A reproducing apparatus for reproducing a disc-shaped recording medium which is accomodated within a case, said case comprising a jacket which has a space for accomodating said disc-shaped recording medium and an opening for allowing said disc-shaped recording medium to go in and out of said jacket, and a lid member inserted through said opening of said jacket for closing said opening of said jacket, said reproducing apparatus comprising:

an inserting opening through which said case is inserted;

a turntable for rotating said disc-shaped recording medium;

clamping means for clamping at least one of said disc-shaped recording medium or said lid member provided at the innermost part on the opposite side from said inserting opening with respect to said turntable;

detecting means for detecting whether said disc-shaped recording medium is loaded within said reproducing apparatus; and

arresting means provided at the vicinity of said inserting opening, for arresting the insertion of a jacket having said lid member into said reproducing apparatus and allowing the insertion of a jacket not having said lid member into said reproducing apparatus, by displacing according to the detecting operation of said detecting means,

said arresting means allowing the insertion of the jacket having or not having said lid member into said reproducing apparatus in a state where said detecting means is not performing a detecting operation.

4,380,781

DISC-SHAPED RECORDING MEDIUM REPRODUCING APPARATUS

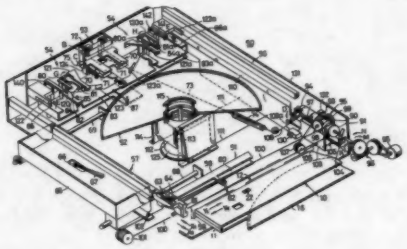
Atsumi Hirata, Fujisawa, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Mar. 16, 1981, Ser. No. 244,058

Claims priority, application Japan, Mar. 17, 1980, 55/32718

Int. Cl.³ G11B *5/012, 5/016, 23/02, 5/52*

U.S. Cl. 360—97 **5 Claims**



1. A reproducing apparatus for reproducing a disc-shaped recording medium which is accommodated within a case, said case comprising a jacket which has a space for accommodating said disc-shaped recording medium and an opening for allowing said disc-shaped recording medium to go in and out of said jacket, and a lid member inserted through said opening of said jacket for closing said opening of said jacket, said lid member having cutouts and ride-over parts,

said reproducing apparatus comprising:

an inserting opening through which said case is inserted;

a turntable for rotating said disc-shaped recording medium;

clamping means for clamping at least one of said disc-shaped recording medium and said lid member provided at an innermost part on the opposite side from said inserting opening with respect to said turntable;

detecting means for detecting whether said disc-shaped recording medium is loaded within said reproducing apparatus;

a reproducing transducer for reproducing the disc-shaped recording medium placed on said turntable;

reproducing operation means for moving said reproducing transducer from a waiting position to a reproducing position with respect to the disc-shaped recording medium to perform a reproducing operation; and

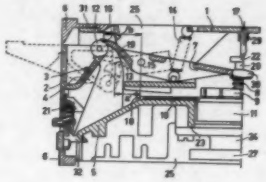
operating means connected to said detecting means and said reproducing operation means and operated upon starting of the reproducing operation, for operating said reproducing operation means only when operated in a state where said detecting means is detecting whether a disc-shaped recording medium is loaded within said reproducing apparatus.

4,380,782

DRIVE APPARATUS FOR FLEXIBLE MAGNETIC DISCS

Yasuyuki Hirose; Motohiro Shimaoka; Shoichiro Saito, and Toru Kowaguchi, all of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Dec. 26, 1979, Ser. No. 107,067
Claims priority, application Japan, Dec. 28, 1978, 53-162525
Int. Cl.³ G11B 5/016, 17/02, 21/12
U.S. Cl. 360—99 11 Claims



1. A disc drive apparatus for bringing a magnetic head into engagement with a flexible magnetic disc; capable of storing information, comprising

means for rotating a flexible magnetic disc, said rotating means including a rotatable spindle adapted to engage one side of said disc and a clamping member movable into engagement with the other side of said disc to hold said disc to said spindle;

means including a pivotal arm member connected to said clamping member for moving said clamping member into and out of engagement with said disc;

a magnetic head assembly including at least one magnetic head;

a solenoid having a movable plunger;

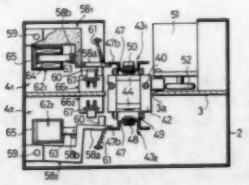
positioning means connected to said movable plunger of said solenoid for moving each said magnetic head into and out of engagement with said disc, said positioning means serving to move each said magnetic head into a first position where said magnetic head is away from the path of movement of said disc, a second position near said disc upon movement of said arm member to move said clamping member relative said disc and into a third position engaging said disc upon movement of said plunger into said solenoid, said solenoid including a bore slidably receiving said plunger, said bore being sealed against said plunger to allow air within said bore to be compressed by said plunger as it moves inwardly of said solenoid so to bring each said head into gentle engagement with said disc.

4,380,783

FLEXIBLE DISK DRIVE

Manfred Adamek, Kirchen-Freusburg, and Klaus Rinneburger, Wilnsdorf, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 26, 1981, Ser. No. 247,583
Int. Cl.³ G11B 17/02, 5/82
U.S. Cl. 360—99 10 Claims



1. A drive apparatus for a flexible magnetic disc enveloped in a flat envelope having a central opening through which a central portion of the disc is accessible for driving engagement during operation, the apparatus comprising:

a frame having an entrance opening adapted for receiving an enveloped disc inserted therethrough;

a pivoted cover having a front and a rear side, and arranged on the frame for movement between an open position and a closed position at which the opening is covered, the cover having a projection extending from the rear side;

means, associated with the frame, for driving the disc, the driving means including a turntable rotatable about an axis of rotation and a rotatable clamping member coaxially spaced from the turntable;

a guide spindle mounted in the frame and extending toward the turntable, the clamping member being movably mounted on the spindle for axial movement therealong; and

linking means, arranged between the cover and the clamping member, for moving the clamping member toward and away from the turntable to cause a received disc to be clamped between the clamping member and the turntable, and to be driven thereby, when the cover, after inserting the enveloped disk through the opening, is in the closed position, and to be unclamped, when the cover is moved into the open position;

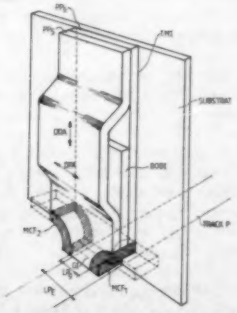
characterized in that the linking means includes an engaging surface provided on the projection, and a lever, the lever being pivotally mounted to the frame about a pivoting axis and having means for engaging the clamping member to move it axially along the spindle, and the lever also having a surface for contact by the engaging surface at a point spaced a leverage distance from the pivoting axis, and the cover, the projection and the lever being arranged such that the leverage distance increases from a minimum to a maximum as the cover moves from the open position to the closed position.

4,380,784

MAGNETIC TRANSDUCER FOR READING AND/OR RECORDING OF DATA CONTAINED ON A MAGNETIC CARRIER

Jacques Desserre, Rambouillet; Michel Helle, Marcq, and Jean-Pierre Lazzari, Montfort l'Amaury, all of France, assignors to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Filed Mar. 12, 1981, Ser. No. 242,923
Claims priority, application France, Apr. 2, 1980, 80 07454
Int. Cl.³ G11B 5/22, 5/20
U.S. Cl. 360—126 5 Claims



1. A magnetic transducer adapted to perform read and/or write functions on a magnetic data carrier which travels before the same, the data being contained within a plurality of tracks on the carrier comprising:

a magnetic circuit formed by two pole pieces separated by a gap parallel to the carrier, the gap having a larger dimen-

sion perpendicular to the direction of travel of the data of a track as it passes in front of said gap, said larger dimension being defined thin superimposed magnetic layers having a constricted width at one end formed by lateral cutouts at opposite sides of the layers,

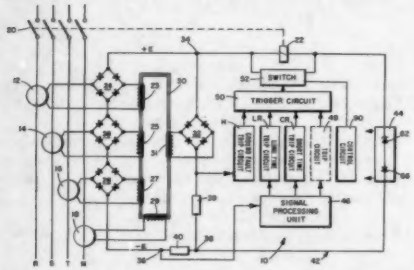
a winding coupled magnetically to the magnetic circuit, and means disposed on said lateral cutouts at either side of the gap as seen in the direction of its larger dimension and operatively associated with the pole pieces for channelling magnetic flux emitted by the immediate surroundings of the track of the record carrier to be read by the transducer in such manner that said flux does not pass through said winding.

4,380,785

SOLID STATE TRIP UNIT FOR AN ELECTRICAL CIRCUIT BREAKER

Pierre Demeyer, Uriage, and Paul Claudin, Grenoble, both of France, assignors to Merlin Gerin, Grenoble, France

Filed Mar. 17, 1981, Ser. No. 244,691
Claims priority, application France, Mar. 31, 1980, 80 07284
Int. Cl.³ H02H 3/093, 3/10
U.S. Cl. 361—96 **6 Claims**



1. An electronic trip device for initiating automatic tripping of an electric circuit breaker in response to an abnormal circuit condition in a protected electrical distribution circuit comprising:

a detector including current transformers, said detector operating to deliver a current signal having a predetermined relationship to the current flowing in said distribution circuit;

a series circuit connected to said detector and including a metering resistor for generating a voltage signal proportional to said current signal, a trip coil for initiating said automatic tripping when it is energized, and means forming a power supply, said metering resistor, trip coil and power supply means being electrically connected in series;

electronic trip circuits responsive to said voltage signal for generating a tripping signal in response to said abnormal circuit conditions, said electronic trip circuits being powered by said power supply means;

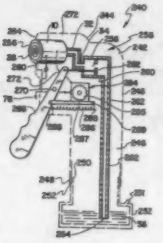
a shunt circuit electrically connected in parallel to said trip coil and including a switch responsive to said tripping signal and being either in an ON-state to shunt the trip coil or in an OFF-state after the generation of said tripping signal for energization of said trip coil.

4,380,786

ELECTROSTATIC ATOMIZING DEVICE

Arnold J. Kelly, Princeton Junction, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 853,499, Nov. 21, 1977, Pat. No. 4,255,777. This application Sep. 2, 1980, Ser. No. 183,207
Int. Cl.³ B05B 5/00
U.S. Cl. 361—228 **10 Claims**



1. A hand held aerosol generator device which comprises:

(a) a cylindrically shaped housing of an L-shaped configuration having a short leg and a longer leg and a chamber therein, the open end of said longer leg being internally threaded, the closed end of said short leg having an opening therethrough;

(b) a liquid pump means disposed within said chamber of said housing of said L-shaped configuration;

(c) a bottle having an externally threaded neck adapted to threadably engage into said internally threaded end of said longer leg of said housing of said L-shaped configuration, said bottle adapted to receive a liquid therein;

(d) a conduit joined in serial communication with said liquid pump means and extending into said liquid in such bottle;

(e) means for activating said liquid pump means; and

(f) an electrostatic atomizing device disposed within said chamber of said housing of said L-shaped configuration, said electrostatic atomizing device comprising:

(1) a housing having a chamber therein, said fluid being disposed within said chamber, said chamber of such housing being joined in serial communication with said liquid pump means;

(2) means for generating an electrical charge and passing an electrical charge through said fluid in said chamber thereby generating a free excess charge in said fluid within said chamber; wherein said generating means for said electrical charge includes at least a first and a second electrode, said first and said second electrodes being in liquid contact with said fluid within said chamber;

(3) a ground electrode disposed externally to said housing, said ground electrode forming an electrostatic field; and

(4) means for issuing said fluid from said chamber in the form of said charged droplets, said charged droplets passing through said electrostatic field, said means for issuing said fluid extending outwardly through such opening in said closed end of said shorter leg of said L-shaped configuration.

4,380,787

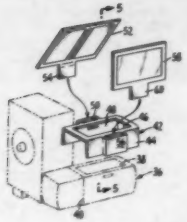
CLAMP FOR BOUNCE-FLASH APPARATUS

Kenneth Stone, P.O. Box G, Boulder Creek, Calif. 95006

Filed Sep. 21, 1981, Ser. No. 303,861
Int. Cl.³ G03B 15/02
U.S. Cl. 362—16 **3 Claims**

1. A clamp and reflector combination for a bounce-flash unit wherein a flash gun is employed having a generally rectangular end surrounding a light emitting surface, comprising in combination:

(a) a band at least partially surrounding said rectangular end in releasably gripping relationship,
(b) said band carrying at least one slot member, and



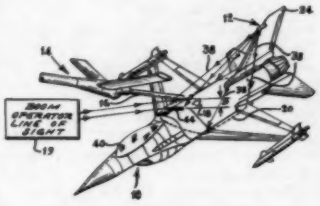
(c) a reflector having a tongue whereby said tongue can be placed in said slot and retained in a fixed relationship with said light emitting surface.

4,380,788

AERIAL REFUEL FLOODLIGHT

Victor E. Korski, Fort Worth, Tex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 11, 1981, Ser. No. 262,656
Int. Cl.³ B64D *39/00, 47/02*
U.S. Cl. 362—62 **8 Claims**



1. In a receiver aircraft utilized for in flight refueling having a fuselage, a vertically extending stabilizer and a refuel receptacle, the improvement therein being in the form of an aerial refuel floodlight mounted upon the leading edge of the top portion of said vertical stabilizer, said aerial refuel floodlight comprising an elongated fixture having a projectile-like configuration, a lamp, means situated within said fixture for mounting said lamp in position therein, means surrounding said lamp for reflecting light emanating from said lamp in a predetermined direction, a lens situated adjacent said lamp along an axis being at an angle with respect to the axis of said lamp, means situated adjacent said lens for directing light passing through said lens in a predetermined direction, and an opening situated within said fixture juxtaposed said light directing means and said lens for allowing said directed light as well as light passing through said lens to pass therethrough thereby illuminating a portion of said fuselage adjacent and including said refuel receptacle.

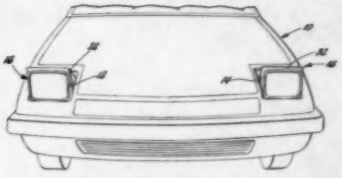
4,380,789

ACTUATOR FOR A CONCEALABLE HEADLAMP ASSEMBLY

Gale M. Craig, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 28, 1980, Ser. No. 211,375
Int. Cl.³ B60Q *1/06*
U.S. Cl. 362—65 **2 Claims**

1. In combination with a vehicle having a body, a pair of openings formed in the forward end of said body on opposite sides of the longitudinal axis of said body, a headlamp assembly including a housing located in each of said pair of openings and having a headlamp mounted therein; means connecting said housing to said body for rotation between a first position wherein said housing conceals the associated opening and a second position wherein said headlamp in said housing is exposed to project a beam of light forwardly of said body; an actuator for rotating said headlamp assembly from said first position to said second position; the improvement wherein said actuator comprises a motor connected to an output shaft, a crank rigidly mounted on said output shaft for rotation therewith, said crank having an eccentric shaft and a cam formed therewith; a first link having an intermediate portion thereof rotatably mounted on said eccentric shaft and having a first end portion and a second end portion; a second link, a first pivotal connection connecting one end of said second link to said first end portion of said first link, a second pivotal connection connecting the other end of said second link to said headlamp assembly; the arrangement of said first link, said second



link and said crank being such that when the headlamp assembly is in said first position the center of said eccentric shaft and the center of said output shaft are located substantially in alignment with and between the centers of said first and said second pivotal connections and said cam is positioned between the center of said eccentric shaft and the center of said second pivotal connection in contact with said second end portion of said first link so when said housing of said headlamp resists opening movement, rotation of said crank approximately 180° in one direction causes corresponding rotation of said eccentric shaft resulting in translational movement of said first and second links along the longitudinal axes thereof towards said housing to provide an increased force which moves said headlamp assembly to an intermediate position between said first and second positions, after which continued rotation of said crank in said one direction causes said cam to contact said first end portion of said first link and rotate said first link about said center of said output shaft to allow said first link and said second link to complete the movement of said headlamp assembly to said second position.

4,380,790

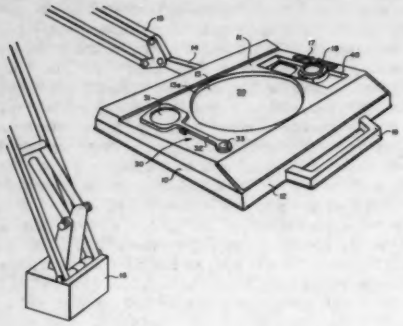
MULTI-FUNCTION LIGHT DEVICE

Al Saferstein, and Gilbert Spector, both of Greenwich, Conn., assignors to Innomed Corporation, Greenwich, Conn.

Filed Nov. 17, 1980, Ser. No. 207,528
Int. Cl.³ F21V *9/00*
U.S. Cl. 362—231 **9 Claims**

1. A multi-function light device comprising: a base having two opposed main surfaces and an aperture extending through the main surfaces; a first magnifying lens mounted on the base and aligned with the aperture to enable magnified viewing through the base from one main surface to the other main surface; an energizable source of blacklight blue light and an energizable source of white light; means mounting the light sources on the other main surface about the first magnifying

lens; and means for connecting the light sources to an energy source wherein the one main surface of the base has a substantially planar portion forming the top thereof and at least one indentation for receiving an object.

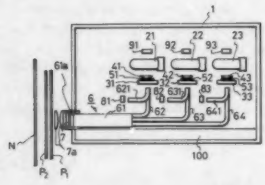


4,380,791

ELECTRICALLY CONTROLLED ADDITIVE LAMP HOUSING FOR OPTICAL PRINTING

Masayuki Nishizawa, Koshigaya, Japan, assignor to Hoei Sangyo Kabushiki Kaisha, Japan

Filed May 26, 1981, Ser. No. 267,413
Claims priority, application Japan, Jun. 3, 1980, 55-75137
Int. Cl.³ F21V 9/08, 7/04, 5/04, 13/12
U.S. Cl. 362—231 9 Claims



1. An electrically controlled additive lamp housing for optical printing, said lamp housing comprising

first, second and third light sources;

first, second and third dichroic filters positioned at corresponding ones of the first, second and third light sources for deriving red, green and blue beams, respectively, from said light sources;

a beam guide member having first, second and third branched bundles and a main bundle composed of said first, second and third branched bundles, each branched bundle having an end surface at which a corresponding one of said beams derived from said dichroic filters is provided, and said main bundle having an end surface for emitting said beams; and

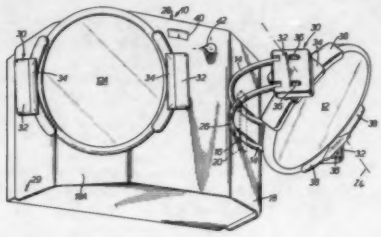
a light quantity control circuit for controlling the quantities of light of said light sources.

4,380,792

PIVOT MOUNTING

Christopher Terrell, London, England, assignor to Chloride Group Limited, London, England

Filed Oct. 14, 1980, Ser. No. 196,829
Claims priority, application United Kingdom, Apr. 3, 1980, 8011389; Jul. 30, 1980, 8024974
Int. Cl.³ F21V 21/14
U.S. Cl. 362—250 15 Claims



1. A pivot mounting for an object, comprising:

a pair of journal bearings having a common journal axis and being relatively movable along said axis, each said bearing comprising a journal component and a housing component, one of said components including an object gripping surface, wherein said object is gripped between said journal bearings by said gripping surfaces; and

spring means urging said journal bearings towards one another along said journal axis,

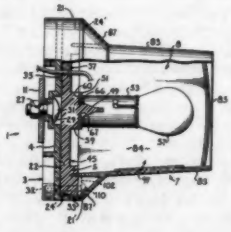
wherein said components are held together and said object is held between said gripping surfaces solely by the biasing of said spring means along said axis.

4,380,793

SUBMERSIBLE VEHICULAR LAMP ASSEMBLY

Virgil W. Potts, Cass County, Mo., assignor to Peterson Manufacturing Co., Grandview, Mo.

Filed Dec. 19, 1980, Ser. No. 218,078
Int. Cl.³ F21V 29/00
U.S. Cl. 362—267 6 Claims



1. A submersible lamp assembly comprising:

(a) a lens body having a face and surrounding wall members defining a cavity therein, said lens body wall members terminating in a continuous lip;

(b) a substantially planar elastomeric lens base having illumination means mounted thereon, said illumination means being operably received in said cavity, said lens base having a continuous groove extending inwarding thereof, said groove receiving said lens lip when said lens base is placed in covering relationship with said lens cavity, said lip engaging said groove in a watertight, sealable relationship, and

(c) whereby said lens lip and lens base groove cooperate as

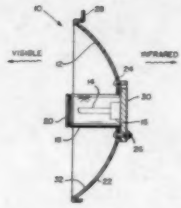
an alignment means assuring that said lens base is positioned in proper covering relation relative to said cavity when said lip is received within said groove.

4,380,794

SURGICAL LAMP CHARACTERIZED BY HAVING AN IMPROVED REFLECTOR

Alfred C. Lawson, Fairport, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Jun. 15, 1981, Ser. No. 274,055
Int. Cl.³ F21V 7/00
U.S. Cl. 362—296 **1 Claim**



1. An improved surgical lamp of the type having a broad spectrum light source which emits ultraviolet, visible and infrared light and a reflector, wherein the improvement is comprised of:

(a) a reflector blank molded from polyetherimide resin; and

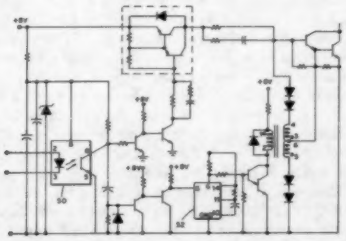
(b) a dichroic coating deposited directly upon the front surface of said reflector blank for reflecting visible light while passing infrared light.

4,380,795

BASE DRIVE CIRCUIT FOR A FOUR-TERMINAL POWER DARLINGTON

Fred C. Lee, Blacksburg, and Roy A. Carter, Salem, both of Va., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 24, 1981, Ser. No. 246,975
Int. Cl.³ H02M 7/537
U.S. Cl. 363—131 **6 Claims**



1. An electrical power switching device, comprising:

a. a four-terminal power Darlington including a first driver transistor stage having a first base and a second power transistor stage having a second base coupled to the emitter of said first transistor stage; and

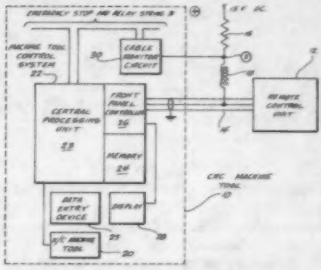
b. means for respectively applying first and second independent reverse currents to the emitter-base junctions of said first and second transistor stages so as to independently sweep the minority carriers out of said emitter-base junctions, thereby turning off said driver stage and said power stage at their own respective sweep-out rates wherein said reverse current applying means includes a current transformer.

4,380,796

PORTABLE CONTROL BOX FOR COMPUTER NUMERICALLY CONTROLLED MACHINE TOOLS

Lyle D. Ostby, Brookfield, Wis., assignor to Kearney & Trecker Corporation, Milwaukee, Wis.

Filed Dec. 5, 1980, Ser. No. 213,203
Int. Cl.³ G06F 15/46
U.S. Cl. 364—171 **14 Claims**



7. A computer numerically controlled machine tool system comprising:

a numerically controlled machine tool;

a machine tool control system coupled to said machine tool for controlling machine tool operation in accordance with radio frequency signals supplied thereto and for transmitting radio frequency signals indicative of machine tool operating conditions;

a remote control unit including computer means responsive to operator commands for transmitting radio frequency signals to said machine tool control system for controlling machine tool operation and for displaying machine tool operating conditions to the operator in accordance with radio frequency signals received from said machine tool control system; and

a radio frequency link coupled between said machine tool control system and said remote control unit for carrying radio frequency signals therebetween.

4,380,797

TWO LEVEL STORE WITH MANY-TO-ONE MAPPING SCHEME

Peter L. Desyllas, Wilmslow; Barry G. Radley; Alasdair Rawsthorne, both of Glossop; John R. Eaton, and John E. Murray, both of Salford, all of England, assignors to International Computers Ltd., London, England

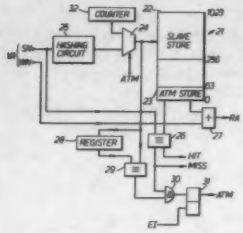
Filed Jul. 7, 1980, Ser. No. 165,854
Claims priority, application United Kingdom, Jul. 4, 1979, 7923329
Int. Cl.³ G06F 13/00
U.S. Cl. 364—200 **4 Claims**

1. In a data processing system having a main store connected to a smaller, faster slave store into which data items are copied from the main store on demand, the data items in the main store being mapped on to the locations of the slave store according to a many-to-one mapping scheme, the improvement comprising:

(a) a further store connected in tandem with the slave store, the further store being of smaller size than the slave store and having an access speed comparable to that of the slave store;

(b) means connected to the slave store for producing a control signal when an attempt is made to access from the slave store two different data items which map on to the same location of the slave store, and

(c) means connected to the slave store and further store, and responsive to said control signal, for suspending address-



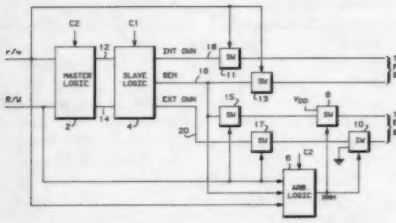
ing of the slave store and addressing the further store instead when the control signal is present.

4,380,798

SEMAPHORE REGISTER INCLUDING OWNERSHIP BITS

Paul D. Shannon, and William C. Bruce, Jr., both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 15, 1980, Ser. No. 187,259
Int. Cl.³ G06F *15/16*
U.S. Cl. 364—200 **3 Claims**



1. A semaphore register for use in a data processing system to indicate the status of a resource shared by first and second processors, comprising:

master latch means for providing a semaphore signal in a first state in response to a set signal and in a second state in response to a reset signal, said first state indicating unavailability of said resource and said second state indicating availability of said resource;

first slave latch means coupled to said master latch means, for latching the state of said semaphore signal during a first clock interval;

set logic means coupled to said master and first slave latch means and to said first and second processors, for providing said set signal to said master latch means if, during a second clock interval following said first clock interval, said semaphore signal is in said second state and a first control signal is received from either of said processors;

reset logic means coupled to said master and first slave latch means and to said first and second processors, for providing said reset signal to said master latch means if, during said second clock interval, said semaphore signal is in said first state and a second control signal is received from either of said processors;

output means coupled to said first slave latch means and to said first and second processors, for providing to said first and second processors a respective output signal corresponding in state to said latched semaphore signal in response to receiving said first control signal respectively therefrom during said second clock interval; and

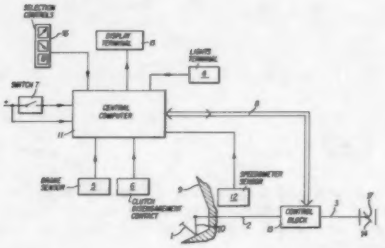
arbitration logic means coupled to said output means and to said first and second processors, for forcing the output signal provided by said output means to said second processor to said first state to indicate that said resource is unavailable, in response to simultaneously receiving said first control signals from both of said processors.

4,380,799

SPEED CONTROL FOR AN AUTOMOBILE

Pierre-Yves Allard, Rueil, and Gilles Leconte, Paris, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Jun. 13, 1980, Ser. No. 159,342
Claims priority, application France, Jun. 29, 1979, 79 16879
Int. Cl.³ B60K *31/00*; F02D *1/08*; G05D *13/62*
U.S. Cl. 364—426 **12 Claims**



1. In a speed control for an engine of an automobile having an accelerator pedal, a speed sensor, and a butterfly valve, which is capable of serving as a driving aid, the improvement comprising:

a depressible return means for opposing, with a limited force equal to or greater than a predetermined value, the depression force exerted by the driver against the accelerator pedal as soon as the latter exceeds, in its position, a predetermined value; an electronic computer connected to means for selecting a reference speed and to means for display of said preselected reference speed; a potentiometer the movable part of which is dependent upon said accelerator pedal, and the output of which is connected to the electronic computer, the outputs of which are in turn connected to an electric motor which directly controls the angular displacements of the butterfly valve, in which the depressive force of said accelerator pedal corresponds to a first value over a given length of travel of said pedal, and to a second value, higher than the first, over the remaining travel of said accelerator pedal, creating a friction point at a given point in the travel of said accelerator pedal, corresponding to passage from a first depressive force to a second higher than the first, in which the displacements of said accelerator pedal are graduated in speed; a mechanical connection between said accelerator pedal and said butterfly valve, incorporating a control block, controlled by the electronic computer, wherein said control block includes an epicyclic train controlled by a motorized reduction gear, a recopy potentiometer, and a blade turning about the axis of symmetry of said epicyclic train.

4,380,800

DIGITAL ROUGHNESS SENSOR

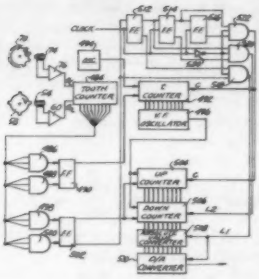
John R. Wilkinson, Dearborn, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 904,132, May 8, 1978, abandoned. This application Sep. 19, 1980, Ser. No. 188,803
Int. Cl.³ F02D *5/02*; F02M *51/00*; F02B *3/08*
U.S. Cl. 364—431.08 **27 Claims**

1. A roughness sensor for generating roughness signals in-

dicative of the variation in the magnitude of the torque impulses imparted to a rotating element, the sensor comprising:

means detecting the rotational position of the rotating element for generating first interval signals indicative of a first angular interval of the rotating element's rotation for each torque impulse, and for generating second interval signals indicative of a subsequent angular interval of the rotating element's rotation, wherein the rotating member has a maximum rotational velocity in response to each torque impulse in said subsequent angular interval;



means response to said first and second interval signals for generating a normalized signal having a value proportional to the magnitude of the torque impulse determined by the time required by the rotating element to rotate through said subsequent angular interval and inversely proportional to engine speed determined by the time required for the rotating element to rotate through said first annular interval; and

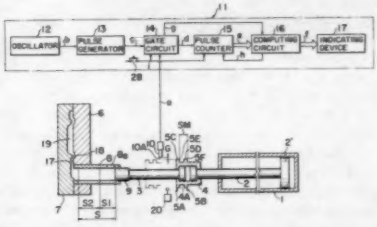
means for generating a roughness signal from at least two sequentially generated normalized signals, said roughness signal having a value equal to the difference between said sequentially generated normalized signals.

4,380,801

APPARATUS FOR MEASURING INJECTION SPEED IN INJECTION MOLDING MACHINES

Noriyuki Motomura, and Hiroyuki Tsuboi, both of Zama, Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 117,844, Feb. 4, 1980, abandoned. This application Nov. 12, 1981, Ser. No. 320,728
Claims priority, application Japan, Feb. 7, 1979, 54-14670
Int. Cl.³ G01P *3/48;* G06F *15/46*
U.S. Cl. 364—565 **2 Claims**



1. An apparatus for measuring an injection speed in an injection molding machine having:

a piston rod reciprocated by an injection cylinder of the injection molding machine,

a plunger rod having, at one end thereof, a plunger tip slidably received in a plunger sleeve connected to a die, and

a plunger coupling for interconnecting the plunger rod and the piston rod,

the improvement in which the plunger coupling is provided with two projections with a recess formed therebetween, and which comprises:

a magnetic proximity switch for detecting said projection while the plunger coupling moves along the axis of the plunger rod and producing an output in accordance with the result of the detection, and

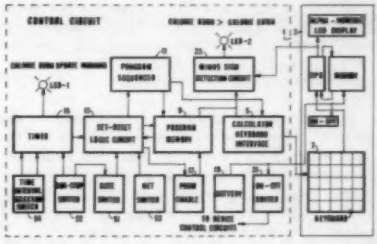
a means for computing in accordance with the output of said magnetic proximity switch, the speed of the plunger coupling, said computing means comprising means for producing pulses at a predetermined interval (T_M), a gate circuit responsive to the output of said proximity switch for passing said pulses during the time interval after an edge of a first projection has passed said proximity switch and before a corresponding edge of a second projection passes said proximity switch, a pulse counter responsive to said output of said gate circuit for counting the number of pulses from said gate circuit, and a computing circuit responsive to the output of said pulse counter for computing the speed (V), in accordance with the number (N) of pulses counted by said pulse counter, the interval (T_M), and the distance (S_M) between said edge of said first projection and said edges of said second projection.

4,380,802

ELECTRONIC CALORIE COUNTER

Richard B. Segar, Annapolis, Md., and Lewis C. Marascalco, Pittsburgh, Pa., assignors to GPD Inc., Mitchellville, Md.

Continuation-in-part of Ser. No. 907,338, May 18, 1978, Pat. No. 4,212,079. This application Jul. 2, 1980, Ser. No. 165,268
Int. Cl.³ G06F *15/42*
U.S. Cl. 364—900 **13 Claims**



1. A calorie monitoring device for calculating the calories burned by a person, the calories consumed by the person and the net difference therebetween, said device comprising:

(a) calculator means for performing arithmetic calculations, said calculator means having a a plurality of memory means for storing alpha-numeric data therein, a keyboard means for entering data into said calculator means and display means for displaying data therein;

(b) program memory means for storing a plurality of control programs for said calculator means;

(c) interface means coupling said program memory means to said calculator means;

(d) program sequencer means, coupled to said program memory means, for controlling the sequence of program steps read from said program memory means;

(e) timer means coupled to said program sequencer means for intiating the operation of said program sequencer means at predetermined time intervals for calculating the calories burned; and

(f) switch means for initiating the operation of said device and for selecting one of said plurality of control programs, wherein said switch means includes set-reset logic means coupled between said timer means, said program sequencer means and said program memory means, said

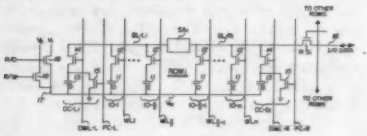
set-reset logic means receiving an input from said timer means at the beginning of said predetermined time intervals for the calculation of calories burned and producing an output in response thereto to initiate the operation of said program sequencer means and for receiving an output from said program memory means upon completion of a program therein and producing an output in response thereto for stopping operation of said program sequence means.

4,380,803

READ-ONLY/READ-WRITE MEMORY

Hsing T. Tuan, Poway, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Feb. 10, 1981, Ser. No. 233,066
Int. Cl.³ G11C 7/00
U.S. Cl. 365—183 6 Claims



1. An improved read-only/read-write semiconductor memory comprising a semiconductor substrate having a body containing dopant atoms of a first conductivity type, a pair of spaced-apart charge storage regions at the surface of said substrate, a bit line at the surface of said substrate spaced apart from said pair of charge storage regions, respective MOSFET transistor gate regions at the surface of said substrate between said bit line and said charge storage regions, and a conductor over said storage regions; the improvement comprising:

dopant atoms of a second conductivity type in one of said storage regions, and dopant atoms of said first conductivity type in the other of said storage regions having a greater doping concentration than is in the body of said substrate; and

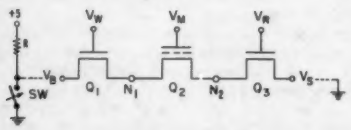
means for applying a read-write mode voltage to said conductor to permit charge to be stored in both of said storage regions, and for applying a read-only mode voltage to said conductor to permit charge to be stored in said one storage region and simultaneously prevent charge from being stored in said other storage region by producing a potential barrier in said other storage region.

4,380,804

EAROM CELL MATRIX AND LOGIC ARRAYS WITH COMMON MEMORY GATE

George C. Lockwood, Dayton, and Murray L. Trudel, Centerville, both of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Dec. 29, 1980, Ser. No. 220,644
Int. Cl.³ G11C 11/40, 7/00
U.S. Cl. 365—184 8 Claims



1. A three element programmable memory cell capable of being erased, programmed and read using a first address line, a second address line, a memory line, a read line and a third line, comprising:

a first field effect transistor, having a gate electrode, electrically coupled to said first address line, a first conductive path electrode, electrically coupled to said second address line, and a first conductive path virtual node;

a second field effect transistor, having a gate electrode, electrically coupled to said read line, a first conductive path electrode, electrically coupled to said third line, and a first conductive path virtual node;

memory means, having a gate electrode, electrically coupled to said memory line, first and second conductive path virtual nodes respectively coupled to said first conductive path virtual nodes of said first and second field effect transistors, and a threshold voltage level responsive to a voltage pulse on said memory line in time coincidence with the formation of a conductive path through said first field effect transistor between said second address line and said first conductive path virtual node, for forming a conductive path between said first and second conductive path virtual nodes of said memory means in response to the relative mangitude between a voltage on said memory line and an alterable threshold voltage in said memory means;

means for generating voltages, coupled to the lines of said memory means, said first field effect transistor and said second field effect transistor, characterized in its provision of voltage sequences, including;

a first sequence, suitable to program said cell to a first binary state, comprising, a coupling of voltages to said first address line and said memory line in substantial time synchronism with substantially zero voltages on said second address line and on said read line;

a second sequence, suitable to program said cell to an alternate, second binary state, comprising, a coupling of voltages to said memory line and to said first and second address electrodes, suitable to electrically decouple said second address line from said first conductive path virtual node of said first field effect transistor, in substantial time synchronism with a substantially zero voltage on said read line; and

a third sequence, suitable to read the binary state programmed into said cell, comprising, a coupling of voltages to said first address line and to said read line in substantial time synchronism with a substantially zero voltage on said memory line; and

means for sensing the conductivity between said second address line and said third line.

4,380,805

TAPE BURN-IN CIRCUIT

Robert J. Proebsting, Plano, Tex., assignor to Mostek Corporation, Carrollton, Tex.

PCT No. PCT/US80/01149, § 371 Date Sep. 8, 1980, § 102(e) Date Sep. 8, 1980, PCT Pub. No. WO82/00917, PCT Pub. Date Mar. 18, 1982
PCT Filed Sep. 8, 1980, Ser. No. 277,652
Int. Cl.³ G11C 29/00
U.S. Cl. 365—201 4 Claims

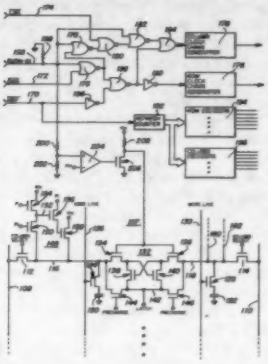
1. A circuit for burning-in and an integrated semiconductor memory which has a plurality of memory cells that are accessed in response to an address which is provided to row and column decoders, and to row and column clock signals, the memory having a sense amplifier for each of a plurality of digit lines which are connectable to the memory cells, the memory further having pullup circuits for driving digit lines to a high voltage state and a refresh counter responsive to an externally supplied refresh signal for generating addresses for the row and column decoders, the burn-in circuit comprising circuit elements integral with the memory including:

a burn-in terminal connected to receive an externally supplied burn-in command having first and second voltage states for burning-in the memory;

means connected to said burn-in terminal for disconnecting the sense amplifiers when said burn-in command is at said

first state to write a high voltage state into the memory cells by operation of the pullup circuits;

means for receiving a repetitive refresh signal to cycle the refresh counter and supply a sequence of row and column addresses to the row and column decoders;



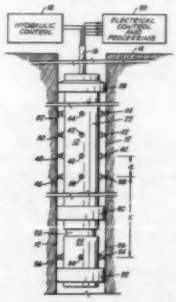
means for generating the row clock signals when said burn-in command is at said first state or said second state and the refresh signal is received; and

means for generating the column clock signals when said burn-in command is at said first state or said second state and the refresh signal is received.

4,380,806
METHOD AND APPAPATUS FOR SHEAR WAVE LOGGING

Kenneth H. Waters, Oakland, Calif.; John R. Hopkins, and Charles E. Payton, both of Houston, Tex., assignors to Conoco Inc., Ponca City, Okla.

Filed Mar. 19, 1980, Ser. No. 131,814
Int. Cl.³ G01V *1/40, 1/36*
U.S. Cl. 367—27 **3 Claims**



1. Apparatus for shear wave logging of a borehole formed in the earth surface, comprising:

frame means for controlled suspension down said borehole;

four quadrature arrayed shear wave transmitters carried by said frame means at a first position along said frame means and actuatable between a retracted position and firm contact with the borehole wall;

four quadrature arrayed shear wave receivers carried by said frame means at a second position spaced by a selected vertical distance from said first position and actuatable between a retracted position and firm contact with the borehole wall and providing a receiver signal output;

control means generating a control signal of selected frequency and duration for energization of each of said shear wave transmitters;

recording means receiving signal output from each of said shear wave receivers;

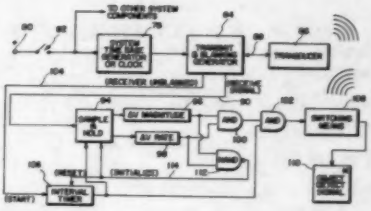
correlator means correlating the control signal with each respective signal output from the recording means to provide output indication of shear wave travel time over the selected vertical distance; and

hydraulic actuation means controllable to actuate said transmitters and receivers simultaneously to enable selected progressive positioning of said frame means along said borehole.

4,380,807
ECHO RECOGNITION SYSTEM

John M. Reynard, Framingham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 81,357, Oct. 3, 1979, abandoned. This application May 26, 1981, Ser. No. 266,901
Int. Cl.³ G01S *7/66, 15/04*
U.S. Cl. 367—97 **10 Claims**



1. A method of detecting a previously transmitted signal of energy returning from a selected target in the presence of energy signals from the source of other than the target, comprising the steps of:

continuously sampling said returning target signal for a number of consecutive time intervals that are of very short time duration relative to the total time duration of said target signal;

establishing that the sampled target signal magnitude increases between consecutive sampling intervals;

establishing that the rate of increase of target signal magnitude between consecutive sampling intervals is greater than or equal to a predetermined rate of increase; and

establishing that said signal magnitude increase and said rate of signal magnitude increase between consecutive sampling intervals is continuous for at least a predetermined portion of the total time duration of said returning target signal.

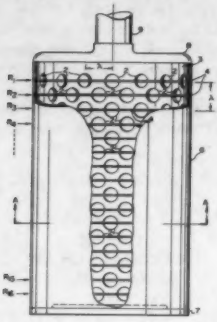
4,380,808
THINNED ARRAY TRANSDUCER FOR SONAR

Eugene E. Hill; Marvin S. Scrimshaw, and Edward W. Showalter, all of Cornwall, Canada, assignors to Canadian Patents & Development Limited, Ottawa, Canada

Filed Feb. 6, 1981, Ser. No. 232,314
Int. Cl.³ H04R *1/40*
U.S. Cl. 367—153 **4 Claims**

1. A sonar transducer for operation in a particular medium at a predetermined frequency f_o, comprising: an array of sonar elements mounted in rows and columns on a structure to form a checkerboard pattern wherein the spacing between the centers of adjacent elements in the direction of the rows and columns is M λ_m and wherein the diagonal spacing between

the centers of adjacent elements in the adjacent rows and columns is 0.707 M λ_m, where $\frac{1}{4} \leqq M \leqq 1$ and where λ_m, is the



wavelength of the signal of frequency f_o transmitted in the medium.

4,380,809

AUTOMATIC POWER SUPPLY SYSTEM

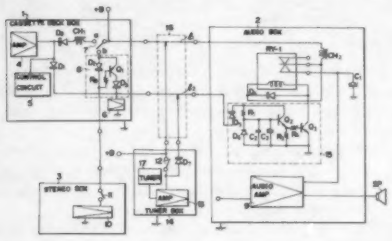
Tadashi Sato, Toda, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Aug. 5, 1980, Ser. No. 175,455

Claims priority, application Japan, Aug. 6, 1979, 54-107644[U]

Int. Cl.³ G11B *31/00*

U.S. Cl. 369—6 **2 Claims**



1. In a power supply apparatus for electrically connecting an electric power supply to a plurality of boxes, including at least a cassette deck box, a stereo box and an audio box, which apparatus includes:

an electric power supply line connected to an electric power supply;

a cassette responsive selector switch connected to said electric power supply line, said switch being located in said cassette deck box and being switched by loading of a cassette into said cassette deck box and by unloading of the cassette from said cassette deck box;

an automatic electric power supply circuit located within said cassette deck box, said circuit being connected to said cassette responsive switch and supplied thereby with electric power, depending on the state of said cassette responsive switch;

a relay located within said audio box and connected by a control line to said automatic supply circuit, which circuit energizes said relay and thereby causes said relay to provide electric power from said power supply line to a circuit within said audio box in response to said cassette responsive switch being switched so as to provide power to said automatic supply circuit; and

a first manually operable switch located within said stereo box and connected between said automatic supply circuit and a circuit within said stereo box;

said automatic supply circuit including at least one transistor and a first diode, said first diode being coupled to said cassette responsive switch and to said transistor, said transistor being turned on and providing electric power to said relay and to a circuit within said cassette box when said automatic supply circuit is actuated by a forward voltage across said first diode; and

said cassette responsive switch being switchable between a tape operating terminal and a stereo box operating terminal, said first manually operable switch in said stereo box being connected to said stereo box operating terminal of said cassette responsive switch through said first diode, closure of said first manually operable switch in said stereo box and switching of said cassette responsive switch to said stereo box operating terminal both being required to produce a forward voltage across said first diode and turn on said transistor and thereby provide electrical power to said relay and said circuit within said cassette deck box, the last-mentioned circuit being a control amplifier, a second diode being connected between said tape operating terminal of said cassette responsive switch and a point at which said transistor applies said electric power to said control amplifier, said second diode being oriented to positively block electric current flow from said point back toward said tape operating terminal of said cassette responsive switch, said cassette deck box further including a tape pre-amp connected between said tape operating terminal of said cassette responsive switch and said second diode, said tape pre-amp receiving electric power only when said cassette responsive switch is switched to said tape operating terminal,

the improvement comprising a tuner box and a junction cable for connecting said tuner box to said power supply line and said control line, said tuner box including a second manually operable switch, a tuner, a tuner amplifier connected to said tuner and a third diode, said second manually operable switch being connected between said tuner amplifier and said power supply line through said cable, and said third diode being connected from the junction between said second switch and said tuner amplifier to said control line through said cable, whereby electric power is provided to operate said tuner amplifier and to energize said relay when said second manually operable switch is closed.

4,380,810

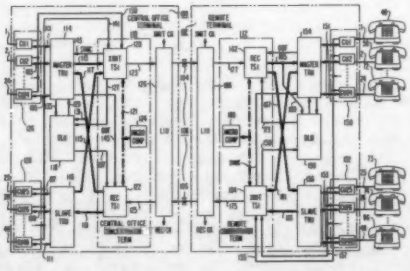
LOOPBACK TEST

Ronald J. Canniff, Naperville, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 12, 1980, Ser. No. 186,619

Int. Cl.³ H04J *3/14*

U.S. Cl. 370—15 **12 Claims**



1. A method of real time testing of a transmission path

through a digital concentrator system comprising a central office concentrator terminal (110), a remote concentrator terminal (112), and a digital line (108) Characterized by the steps of

disabling the storage of encoded signals from subscriber lines (1,2,3 . . . 48) to be connected to concentrator trunks,

storing a looping test code word in place of the encoded signals from said subscriber lines,

transmitting said looping test code word as part of a multiplexed stream to said remote concentrator terminal (112) over said concentrator trunks, and

returning said looping test code word from said remote concentrator terminal (112) over said concentrator trunks, said concentrator trunks being part of said digital line.

4,380,811

PROGRAMMABLE LOGIC ARRAY WITH SELF CORRECTION OF FAULTS

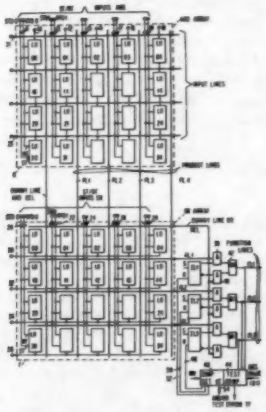
Volknar Götze, Grafenau, and Dieter Schütt, Munich, both of Fed. Rep. of Germany, assignors to International Business Machines Corp., Armonk, N.Y.

Filed Apr. 14, 1981, Ser. No. 254,027

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1980, 3015992

Int. Cl.³ G01R *31/28;* G11C *29/00*

U.S. Cl. 371—10 **14 Claims**



1. A programming logic array (PLA) having an AND array and an OR array with input lines to the AND array, output lines from the OR array, and product term lines interconnecting the two arrays, the PLA having storage flip-flops at the cross points of the arrays, wherein the improvement comprises,

means connecting the flip-flops along individual product term lines of the AND array and along individual output lines of the OR array to form shift registers,

means for sequentially loading data for a test sequence into the shift registers of the PLA,

whereby the array can be tested to locate faults, and

dummy lines in the array connectable to replace a line in which a fault is detected.

4,380,812

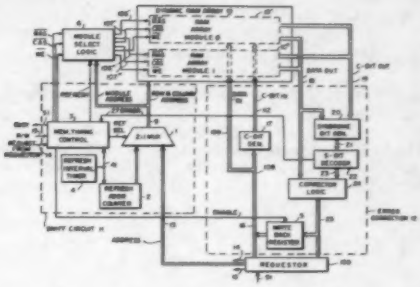
REFRESH AND ERROR DETECTION AND CORRECTION TECHNIQUE FOR A DATA PROCESSING SYSTEM

Michael L. Ziegler, II, Whitinsville; Michael B. Drake, Chelmsford, both of Mass.; John R. Van Roekel, Ann Arbor, Mich., and Ward Baxter, II, Carlisle, Mass., assignors to Data General Corporation, Westboro, Mass.

Filed Apr. 25, 1980, Ser. No. 143,675

Int. Cl.³ G06F *11/10;* G11C *29/00*

U.S. Cl. 371—38 **6 Claims**



1. In a data processing system having a memory in which binary words, each comprising a plurality of bits, are stored:

refresh means connected to said memory for periodically refreshing the bits of one or more stored words at a selected refresh time interval;

error detection means connected to said memory for detecting an error which may exist in at least one binary bit of one of said one or more stored words the detection thereof being performed at substantially the same time as the refreshing of said one or more stored words;

a single error correcting means connected to said error detection means and responsive to the detection of an error in said one of said one or more stored words for correcting said error when said error has been detected during said refresh operation; and

means connected to said error correcting means and to said memory for writing said corrected word back into said memory.

4,380,813

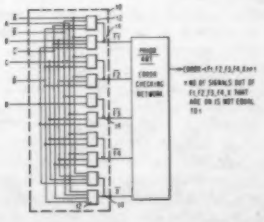
ERROR CHECKING OF MUTUALLY-EXCLUSIVE CONTROL SIGNALS

Leonard L. Fogell, Hyde Park; Samuel R. Levine, and Arnold Weinberger, both of Poughkeepsie, all of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Apr. 1, 1981, Ser. No. 249,808

Int. Cl.³ G06F *11/12*

U.S. Cl. 371—52 **5 Claims**



1. In apparatus for checking a set of control signals F1 to FN generated from a set of variables a to y for invalid conditions

by applying said set of control signals to a detector means which determines when none or more than one of the set of control signals are on, the improvement comprising:

means for generating an additional control signal X=F1·F2· . . . ·FN from the set of variables a to y,

means in said detector means responsive to the additional control signal X to said detector means along with the set of control signals F1 to FN to determine if more than one or none of said control signals F1 to FN and X are on so that said apparatus does not indicate as invalid any valid conditions where none of the control signals F1 to FN are on.

4,380,814

BASEBAND DATA SWITCHING APPARATUS FOR DIGITAL COMMUNICATIONS SYSTEM

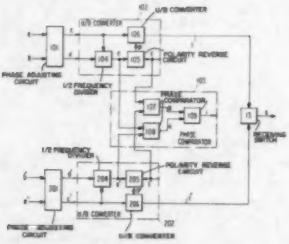
Saburo Shinmyo, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 9, 1980, Ser. No. 195,686

Claims priority, application Japan, Oct. 9, 1979, 54-130133

Int. Cl.³ H04B 7/08

U.S. Cl. 375—40 **8 Claims**



1. A baseband data switching apparatus for alternately switching between first and second channels, each channel having means for receiving baseband unipolar data and clock recovering means for recovering a clock from said baseband unipolar data, said switching apparatus comprising:

first and second data phase adjusting means (301–303, 305) connected to the outputs of said receiving means and of said clock recovering means in said first and second channels, respectively, for adjusting the phase of said baseband unipolar data in each channel in a timed relationship with the respective recovered clocks;

first and second clock phase adjusting means (304) respectively connected to the output of said clock recovering means in said first and second channels for respectively adjusting the phases of said recovered clocks;

first (106) and second (206) unipolar/bipolar conversion means respectively connected to said first and second phase adjusting means and to said first and second clock phase adjusting means for respectively converting the phase-adjusted baseband unipolar data into bipolar data in response to a first control signal and to a second control signal, respectively;

first (104) and second (204) frequency divider means respectively connected to said first and second clock phase adjusting means for respectively dividing the frequencies of the phase adjusted recovered clocks;

first (105) and second (205) control signal supply means for respectively and selectively reversing the polarities of the outputs of said first and second frequency divider means in response to respective third and fourth control signals to provide said first and second control signals;

coincidence detecting means for detecting coincidence or non-coincidence between the outputs from said first and second unipolar/bipolar conversion means, said third and fourth control signals being produced in response to an output from said coincidence detecting means such that said third and fourth control signals have polarities which cause the polarities of said outputs from said first and second unipolar/bipolar conversion means to be coincident; and

means for switching between the outputs of said first and second unipolar/bipolar conversion means.

4,380,815

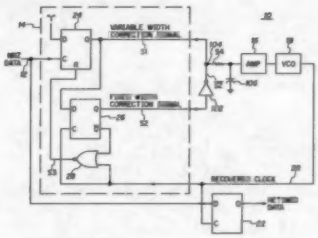
SIMPLIFIED NRZ DATA PHASE DETECTOR WITH EXPANDED MEASURING INTERVAL

Steven J. Clendening, Plano, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 25, 1981, Ser. No. 238,176

Int. Cl.³ H03K 1/17, 5/156

U.S. Cl. 375—80 **17 Claims**



1. An NRZ data phase detector comprising:

phase error means responsive to a data transition for initiating a measuring interval and responsive to a clock transition for terminating said measuring interval, and including means for generating a variable length subinterval between said data transition and a given polarity clock transition and for generating a fixed length subinterval between designated common polarity clock transitions such that said fixed subinterval has a duration of one full clock cycle, the duration difference between said variable subinterval and said fixed subinterval providing phase indication.

4,380,816

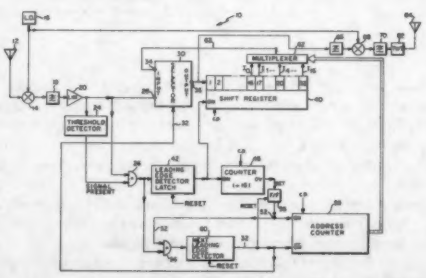
APPARATUS FOR RECYCLING COMPLETE CYCLES OF A STORED PERIODIC SIGNAL

Robin P. Nicholls, Santa Barbara, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Jun. 3, 1981, Ser. No. 270,301

Int. Cl.³ H04B 1/16; G11C 9/00

U.S. Cl. 375—94 **3 Claims**



1. Apparatus for storing a periodic signal and for recycling complete cycle portions of such stored periodic signal comprising:

means for producing first control signals indicating the start of each cycle of the periodic signal;
storage means;
means for commencing storage of the periodic signal in response to one of the first control signals;
means for producing a second control signal indicating that a predetermined portion of the storage means has stored therein a first portion of the periodic signal;
means responsive to both the second control signal and one of the first control signals produced subsequent to the production of the second control signal, for producing a signal indicating the portion of the memory means having stored therein complete cycles of the stored signal; and
means, responsive to the indicating signal, for recycling complete cycles of the stored signal through the storage means.

4,380,817

METHOD FOR EXAMINING A BODY WITH PENETRATING RADIATION

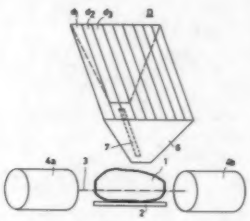
Geoffrey Harding, Reilingen, and Wolfgang Wagner, Hamburg, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 10, 1980, Ser. No. 185,845

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1979, 2939146

Int. Cl.³ G01N *23/20*

U.S. Cl. 378—87 **4 Claims**



1. In a device for examining a body using penetrating radiation which comprises: source means which generate a primary beam of said radiation, detector array means for measuring, and for generating output signals representing, scattered radiation generated in the body along the primary beam, diaphragm means disposed between the detector array means and the primary beam which define a slit shaped aperture having a longitudinal direction which is oriented at right angles to the primary beam; and a large plurality of lamellae of radiation-absorbing material disposed between the aperture and the detector array means which lamellae are disposed at least approximately in planes which intersect colinearly in and along the primary beam whereby the detector array means measure radiation which is both singly and multiply scattered in the body; the improvement which comprises:
means for generating a relative displacement between the primary beam and the diaphragm means, the detector array means, and the lamellae so that, during a portion of the examination, the planes of the lamellae intersect outside of the primary beam whereby the detector array means only measure radiation which is multiply scattered in the body; and
means which subtract output signals from the detectors which represent only said multiply scattered radiation from respective output signals which represent both singly and multiply scattered radiation to produce signals which represent only singly scattered radiation.

4,380,818

X-RAY DIAGNOSTIC SYSTEM COMPRISING A RADIOGRAPHY UNIT WITH AN X-RAY TUBE WHICH EMITS A FAN-SHAPED RADIATION BEAM

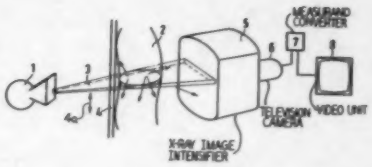
Manfred Pfeiler, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 27, 1981, Ser. No. 267,664

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1980, 3023401

Int. Cl.³ A61B *6/00*; G01J *1/29*; H01J *31/49*; H05G *1/64*

U.S. Cl. 378—099 **8 Claims**



1. A diagnostic radiology system comprising a radiographic unit having a support for a radiography subject, having an X-ray tube, which emits a fan-shaped radiation beam, having a radiation detector for receiving the radiation emerging from the radiography subject, which radiation detector delivers electric output signals corresponding to the received radiation profile, having means for generating relative movement between the support for the radiography subject and the radiation beam over an excursion range, and having a measurand converter which, from the detector output signals, determines the X-ray shadow image corresponding to the excursion range and provides an output for effecting display of such image, characterized in that the radiation detector (**5, 6**) is of the electrostatic memory type for electrostatically storing signals in accordance with the received radiation, and that a canceling device is present which cancels the stored signals in the memory area which, in the direction of movement of the line image formed by the X-ray beam (**3**), are disposed before the line image.

4,380,819

SPOTFILMING APPARATUS

Dennis Everett, Garfield Heights, and Vjekoslav Jukic, Cleveland, both of Ohio, assignors to Picker Corporation, Cleveland, Ohio

Filed Nov. 24, 1980, Ser. No. 209,739

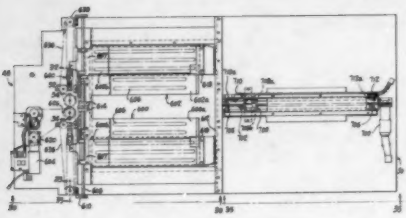
Int. Cl.³ G21F *5/04*

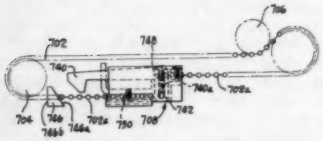
U.S. Cl. 378—114 **12 Claims**

1. A masking apparatus for an X-ray spot-filmer, comprising:
(a) a first pair of shutter-like members constructed of radiation absorptive materials;
(b) guide means for slidably supporting said members for motion in a first direction;
(c) drive means operatively connected to said members for imparting reciprocating motion towards and away from each other;
(d) a second pair of shutter-like members constructed of radiation absorptive material, each member including first and second relatively movable elements;
(e) guide means for slidably supporting said second pair of members for motion in a direction substantially transverse to the direction of motion of said first pair of members;
(f) drive means operatively connected to said second pair of members for imparting reciprocating motion towards and away from each other, said drive means actuating said first and second elements at first and second speeds, respectively.

6. An X-ray spotfilming apparatus, comprising:
(a) an X-ray source;

(b) a spotfilmer housing including a means for clamping and conveying a film cassette between exposure and retracted positions within said housing;
(c) a palpitator cone assembly mounted for movement along a surface of said spotfilmer housing and movable between retracted and operative positions and disposed intermediate the X-ray source and the cassette clamping and conveying means;
(d) cone drive means operatively attached to said palpitator cone for driving said cone between the retracted and operative positions;





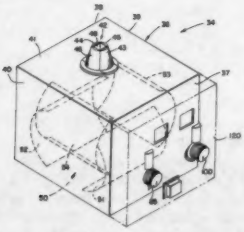
(e) cone lock means for locking the position of said cone when said cone is driven to its operative position by said drive means;
(f) said cone drive means including a means for releasing said lock means when said drive means is energized to retract said cone and further including a drive belt driven by a reversible motor and limit switches mounted in the path of movement of said cone lock means, said switches being operated by said lock means when said cone travels to predetermined positions.

4,380,820

COMPACT X-RAY COLLIMATOR

James W. Cutter, Hollister, Calif., assignor to The Machlett Laboratories, Incorporated, Stamford, Conn.

Filed Jun. 19, 1980, Ser. No. 161,108
Int. Cl.³ A61B 6/06
U.S. Cl. 378—153 **17 Claims**



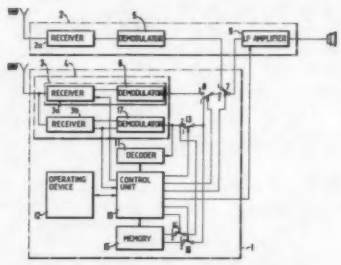
1. A radiation collimator, comprising:
(a) a housing;
(b) a first and a second pair of shutter elements disposed within the housing and rotatably mounted with respect to the housing, each one of such shutter elements having a surface with an edge portion thereof defining a different peripheral portion of an aperture, the surfaces of the first pair of shutter elements being adapted to rotate within a space disposed between the surfaces of the second pair of shutter elements and the surfaces of the second pair of shutter elements being adapted to rotate within a space disposed between the surfaces of the first pair of shutter elements.

4,380,821

TRAFFIC BROADCASTING SYSTEM

Gert Eckhardt, Backnang, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 24, 1980, Ser. No. 171,792
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1979, 2930509
Int. Cl.³ H04B 3/60, 7/155
U.S. Cl. 455—33 **9 Claims**

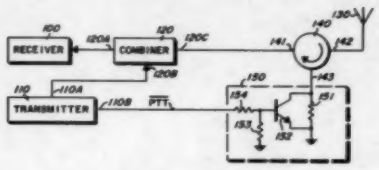


1. A method of transmitting information from a central ground station to a plurality of mobile auxiliary ground stations via at least one base station, each of said auxiliary ground stations being located within the transmitting range of at least one of said base stations and being provided with a receiving device having a control unit and a memory, said method comprising the steps of:
transmitting from said central ground station a block of messages cyclically repeated within a time frame, each message including an address code corresponding to the area code of the region adjacent a corresponding base station, said block of messages being transmitted on a single frequency;
receiving said block of messages at each of said base stations;
transmitting from each of said base stations said received block of messages, said block of messages being transmitted on a single frequency;
receiving said block of messages at the receiving device of said auxiliary ground stations;
recording in said memory those received messages having a selected area code and controlling said memory with said control unit to effect said recording;
converting said recorded messages to an information signal;
recording changed messages having said selected area code and a changed signal associated therewith; and
converting said recorded changed messages to an information signal and controlling said memory with said control unit to effect said converting of said recorded changed messages to said information signal.

4,380,822
TRANSMIT-RECEIVE SWITCHING CIRCUIT FOR RADIO FREQUENCY CIRCULATORS

Robert M. Broton, Palatine, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 2, 1981, Ser. No. 317,707
Int. Cl.³ H04B 1/48
U.S. Cl. 455—80 2 Claims



1. Apparatus for switching a receiver and a transmitter to a common antenna comprising:

combining means, electrically coupled to said receiver and said transmitter, for providing signals from said transmitter to a common signal path and for providing signals from said common path to said receiver in a manner maintaining isolation between said receiver and said transmitter;

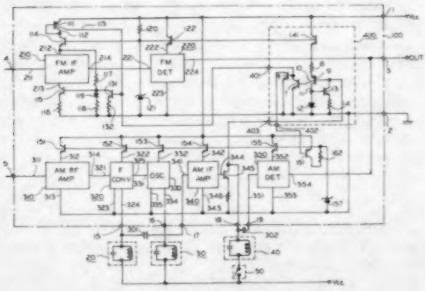
a circulator exhibiting a predetermined characteristic impedance and including first, second and third ports, said first and second ports being electrically coupled to said common signal path and said common antenna, respectively, and

selectively actuable impedance means, electrically coupled to said third port, for exhibiting an impedance approximately equal to the characteristic impedance of said circulator when said transmitter is transmitting and exhibiting an impedance substantially less than said characteristic impedance when said transmitter ceases transmitting.

4,380,823
MULTI-CHANNEL SIGNAL PROCESSING CIRCUIT FORMED IN A SEMICONDUCTOR INTEGRATED CIRCUIT

Naotoshi Higashiyama, and Kazuyuki Doi, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jul. 13, 1979, Ser. No. 57,370
Claims priority, application Japan, Jul. 14, 1978, 53-86337
Int. Cl.³ H04B 1/16
U.S. Cl. 455—143 16 Claims



13. A system comprising:

an integrated circuit chip having a plurality of terminals;

means in said integrated circuit chip for providing signal processing functions in different frequency bands;

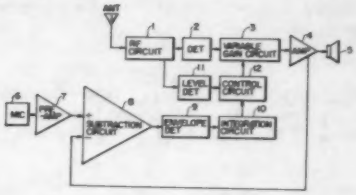
means external to said integrated circuit chip for selectively supplying a voltage from a power supply line through an inductive element to one of said terminals; and

means in said integrated circuit chip and coupled to said one terminal for shifting said functions between said different frequency bands in response to said voltage.

4,380,824
RECEIVING REPRODUCING SYSTEM

Takao Inoue, Kodaira, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 12, 1981, Ser. No. 233,869
Claims priority, application Japan, Apr. 18, 1980, 55-50381
Int. Cl.³ H04B 1/10; H03G 3/24
U.S. Cl. 455—143 5 Claims



4. A receiving reproducing system comprising:

an AM tuner for obtaining an AM detected output signal from an AM radio-frequency signal;

an FM front end for obtaining an FM intermediate-frequency signal from an FM radio-frequency signal;

an FM intermediate-frequency signal processing circuit for obtaining an FM detected output signal from said FM intermediate-frequency signal;

an FM stereo demodulator for obtaining a left-channel demodulated output signal and a right-channel demodulated output signal from said FM detected output signal;

a first terminal which can be supplied by way of a selection means with a selected one of said AM detected output signal and said left-channel demodulated output signal;

a second terminal which can be supplied by way of said selection means with a selected one of said AM detected output signal and said right-channel demodulated output signal;

a first voltage-controlled attenuator having an input terminal, a control terminal and an output terminal, the signal transmission from said input terminal to said output terminal being controllable by a control voltage impressed upon said control terminal and said input terminal being connected to said first terminal;

a second voltage-controlled attenuator having an input terminal, a control terminal and an output terminal, the signal transmission from said input terminal to said output terminal being controllable by a control voltage impressed upon said control terminal and said input terminal being connected to said second terminal;

a first power amplifier the input terminal of which is connected with said output terminal of said first voltage-controlled attenuator;

a second power amplifier the input terminal of which is connected with said output terminal of said second voltage-controlled attenuator;

a first speaker which is driven by the output signal of said first power amplifier;

a second speaker which is driven by the output signal of said second power amplifier;

noise detector means for detecting the surrounding noise level of a sound field;

received level detector means for detecting an AM level which is dependent upon said AM radio-frequency signal as well as an FM level which is dependent upon said FM radio-frequency signal, and

control means responsive to an output signal of said received

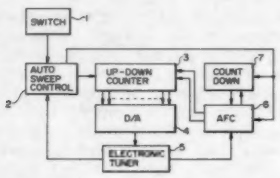
level detector means and connected between the output terminal of said noise detector means and both of said control terminals of said first and second voltage controlled attenuator, said control means including means for transmitting the detected output of said noise detector means to both of said control terminals of said first and said second voltage controlled attenuator in case the output signal of said received level detector means is higher than a preset value so as to control said output signals of said first and second power amplifier proportionally in accordance with said surrounding noise level of said sound field and said control means forcibly lowering the level of said output signals of said first and second power amplifier in case said output signal of said received level detector means is lower than said preset value, thereby disabling sound field effects on said power amplifier output signals.

4,380,825

AUTOMATIC SWEEP DIGITAL TUNING CIRCUIT

Hidcharu Takebe, and Hiroshi Kobayashi, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 4, 1981, Ser. No. 299,502
Claims priority, application Japan, Sep. 9, 1980, 55-125611; Sep. 9, 1980, 55-125612
Int. Cl.³ H04B *1/26*
U.S. Cl. 455—164 **8 Claims**



1. An automatic sweep digital tuning circuit operatively connected to receive a switching signal, comprising:

an automatic sweep control circuit for receiving the switching signal and for generating a pulse signal and a fine control start signal;

an up-down counter, operatively connected to said automatic sweep control circuit, for receiving said pulse signal and for performing a count-up operation to generate a digital output signal;

a digital-to-analog converter, operatively connected to said up-down counter, for converting the digital output signal into an analog signal;

an electronic tuner, operatively connected to said digital-to-analog converter and said automatic sweep control circuit, for receiving said analog signal and for providing a tuning frequency, said automatic sweep control circuit stopping the count-up operation of said up-down counter when the tuning frequency of said electronic tuner approaches a predetermined frequency;

an automatic frequency fine control circuit, operatively connected to said electronic tuner, said automatic sweep control circuit and said up-down counter, for finely controlling the tuning frequency of said electronic tuner in dependence upon said fine control start signal, so that the tuning frequency of said electronic tuner becomes coincident with the predetermined frequency; and

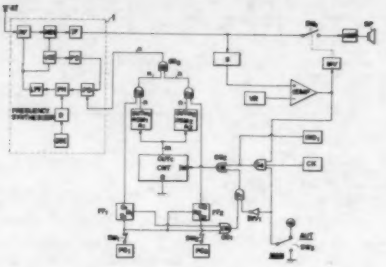
count down means, operatively connected to said automatic frequency fine control circuit and said automatic sweep control circuit, for providing a count down signal to said automatic frequency fine control circuit in dependence upon said fine control start signal, said automatic frequency fine control circuit causing said up-down counter to perform a count down operation, in dependence upon said count down signal, until the tuning frequency of said electronic tuner is an optimum frequency.

4,380,826

CONTROL SYSTEM FOR CHANNEL SELECTION

Kikuo Usugi, Toda, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Dec. 9, 1980, Ser. No. 214,509
Int. Cl.³ H04B *1/26*; H03L *7/18*
U.S. Cl. 455—165 **5 Claims**



1. A control system for channel selection in a frequency synthesized radio receiver which comprises:

a frequency synthesizer coupled to a receiver front end portion;

a memory means provided for storing data signals respectively corresponding to broadcasting waves having the same broadcasting content;

a clock generating means for producing clock pulses;

a first counter means counting the clock pulses for producing an address signal of the memory means and supplying said signal to the memory means;

a channel-selecting means for selecting a data signal outputted from said memory means in response to the address signal and for applying said data signal to said frequency synthesizer to control it so that said front end portion receives a broadcasting wave signal having a desired frequency corresponding to said data signal;

a reference level setting means;

a means for comparing a level of the received broadcasting wave signal outputted from said front end portion and a reference level set by said reference level setting means; and

a first gate means coupled to said means for comparing for selectively supplying clock pulses to said first counter means from said clock generating means, said channel-selecting means being comprised of selecting switches corresponding to respective channels, pulse generating circuits connected to said switches, respectively, flip-flop circuits each adapted to be set by a pulse supplied from the respective pulse generating circuit through the respective selecting switch, and a second gate means for selecting the data signal from said memory means in response to an output from one of said flip-flop circuits.

4,380,827

OSCILLATOR FOR TELEVISION TUNER

Frederick H. Moon, Mt. Prospect, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

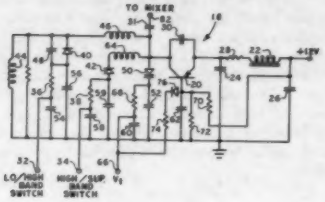
Filed Sep. 21, 1981, Ser. No. 304,391
Int. Cl.³ H04B *1/26*
U.S. Cl. 455—179 **5 Claims**

1. In a television receiver having a tuner which is tunable in response to a tuning voltage and in which an oscillator provides signal injection to a mixer, an improved oscillator, comprising:

a tuning network continuously tunable in response to said tuning voltage;

transistor means coupled to the tuning network for establishing oscillations therein;

a biasing network for establishing a given operating current in said transistor means; and



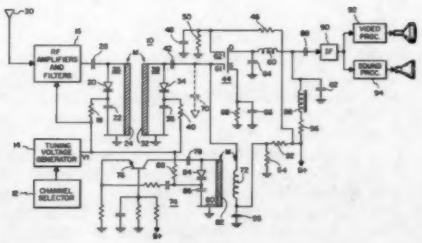
circuit means coupled to the biasing network and responsive to the tuning voltage for changing the operating current in said transistor means so as to increase the oscillator's signal injection level to the mixer at values of tuning voltage which correspond to relatively low channel numbers.

4,380,828

UHF MOSFET MIXER

Frederick H. Moon, Mount Prospect, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed May 26, 1981, Ser. No. 267,136
Int. Cl.³ H04B *1/26*
U.S. Cl. 455—319 **8 Claims**



1. In a UHF television receiver tuner, the improvement comprising:

a tuned circuit including a varactor diode;

a mixer field effect transistor having an input gate electrode characterized by an input parasitic capacitance;

capacitance means coupled in series between said input gate electrode and said tuned circuit;

inductance means coupled in shunt between said input gate electrode and a point of reference potential and having a value of inductance for providing, in association with said capacitance means and with the input parasitic capacitance of said field effect transistor a resonant frequency below the lowest channel frequency in the UHF frequency band; and

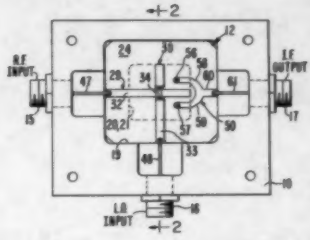
means developing and coupling a local oscillator signal to the input gate electrode of said mixer field effect transistor via said inductance means.

4,380,829

SIMPLIFIED DOUBLE BALANCED FREQUENCY CONVERTER

David M. Stevenson, Topsfield, Mass., and Gale L. Flanders, Dover-Foxcroft, Me., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed May 18, 1981, Ser. No. 264,499
Int. Cl.³ H04B *1/26*; H03H *7/42*
U.S. Cl. 455—327 **17 Claims**



8. Compact, simplified assembly for microwave frequency converter, comprising:

a generally flat dielectric substrate having first and second faces;

a diode bridge defining first and second opposite corner pairs and mounted on said first face;

a first pair of flat conductors on said first face, each extending in a first path outwardly from a respective corner of said first opposite corner pair of said bridge;

a second pair of flat conductors on said first face, each and extending in a second path outwardly from a respective corner of said second opposite corner of said bridge;

a third flat conductor on said second face extending along said first path, so as to be opposed to said first pair of conductors on said first face;

a fourth generally flat conductor on said second face extending along said second path so as to be opposed to said second pair of conductors on said first face;

said third and fourth conductors on said second face being in electrical isolation from each other;

and a pair of fifth flat conductors on one of said faces electrically isolated from conductors extending along said first and second paths each of said fifth conductors extending from a respective corner of one of said bridge opposite corner pairs along said one face to a respective location spaced from said bridge, each of said fifth conductors passing through at a corresponding one of said locations and extending over the other of said faces to join in a junction, wherefrom a heterodyned output signal is obtained when a radio frequency signal and a local oscillator signal are supplied to the conductors, respectively, at ends of said first and second paths distal said bridge.

4,380,830

MICROWAVE UP-CONVERTER

Maurice Marchand, and Christian Petijean, both of Colombes, France, assignors to L.M.T. Radio Professionelle, Colombes, France

Filed Jul. 15, 1981, Ser. No. 283,724
Claims priority, application France, Jul. 18, 1980, 80 15906
Int. Cl.³ H04B *1/26*
U.S. Cl. 455—327 **6 Claims**

1. An up converter for mixing a first radio-frequency wave with a second ultrahigh-frequency wave and for obtaining a third ultrahigh-frequency wave, which comprises:

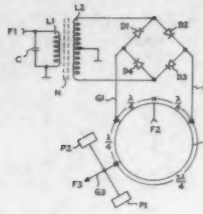
a mixer diode bridge;

a coil for feeding the first wave to the mixer diode bridge;

a microstrip ring;

a first microstrip waveguide for feeding the second wave to this ring;

a second and a third microstrip waveguide for connecting the diode bridge to the ring;



a fourth microstrip waveguide for extracting the third wave from the ring.

4,380,831

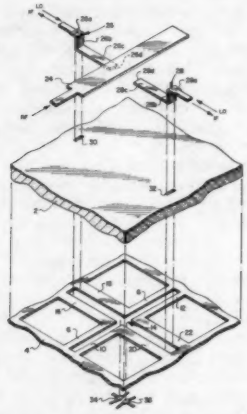
SYMMETRIC MICROWAVE MIXER WITH IMPROVED ISOLATION

Ben R. Hallford, Wylie, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 24, 1981, Ser. No. 286,405

Int. Cl.³ H04B *1/26;* H03H *7/42*

U.S. Cl. 455—327 **11 Claims**



1. Balun coupled microwave circuit layout and structure comprising:

a dielectric substrate;

ground plane means on a bottomside of said substrate;

a first balun secondary conductor pair having first and second conductors and a second balun secondary conductor pair having third and fourth conductors, each conductor pair being on the bottomside of said substrate with the respective conductors of each of said first and second pairs extending from said ground plane means towards each other and terminating in respective spaced ends facing each other at a separation gap therebetween;

a transmission line on the topside of said substrate juxtaposed said first and second pairs of secondary conductors for interacting therewith to dual balun couple a field balanced between the first secondary conductor pair across said gap and a field balanced between the second secondary conductor pair across said gap;

fifth and sixth conductors having topside coplanar sections on the topside of said substrate and having respective linking sections extending down through said substrate to respective bottomside coplanar sections on the bottomside of said substrate, said bottomside sections having spaced ends proximate the spaced ends of said first and second pairs of secondary conductors and said bottomside sections extending oppositely away therefrom; and

a diode mixer having first and second separate, isolated sections, said first section comprising a first diode pair interconnecting the first and second conductors of said first secondary conductor pair and the bottomside section of said fifth conductor at coplanar connection points on the bottomside of said substrate for heterodyne modulation product signal generation, said second section comprising a second diode pair interconnecting the third and fourth conductors of said second secondary conductor pair and the bottomside section of said sixth conductor at coplanar connection points on the bottomside of said substrate for heterodyne modulation product signal generation.

4,380,832

PORTABLE RADIO COMMUNICATION DEVICE HAVING SIGNAL PROCESSING CIRCUIT WITH PRESETTING FUNCTION

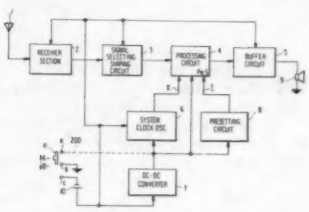
Koichi Nagata, and Shinjiro Umetsu, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jul. 30, 1981, Ser. No. 288,448

Claims priority, application Japan, Jul. 31, 1980, 55-108571[U]

Int. Cl.³ H04B *1/16*

U.S. Cl. 455—343 **7 Claims**



1. A portable radio communication device comprising:

(a) battery means;

(b) voltage converter means connected to said battery means for converting the voltage of said battery means to another voltage;

(c) processing circuit means, having a presetting terminal and a power supply terminal to which said other voltage is supplied, for detecting and processing received signals;

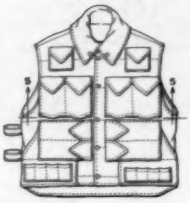
(d) presetting circuit means provided between the output of said volage converter means and said presetting terminal for setting said processing circuit means in an initial state in response to said other voltage; said presetting circuit having at least one element which is chargeable and dischargeable; and

(e) power supply switch means having a first terminal connected to said battery means, a second terminal connected to a reference potential point, a third terminal connected to the input of said presetting circuit either directly or by way of a low impedance means and a connecting means for selectively connecting pairs of said terminals; the voltage of said battery means being supplied in response to a connection of said first and second terminals, and the voltage supply from said battery means being stopped and a discharge time of said element in said presetting circuit being set at a sufficiently low value so that said processing means is securely maintained in said initial state when battery voltage is supplied initially or after prior battery voltage stoppage in response to a connection of said second and third terminals.

DESIGNS

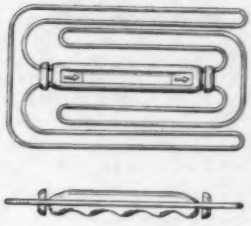
APRIL 19, 1983

268,624
VETERINARIAN VEST
Gary B. Taylor, 1404 Hereford Hwy., Canyon, Tex. 79015
Filed Feb. 24, 1981, Ser. No. 237,748
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—190



268,625
COWBOY BOOT
Harry Vise, Nashville, Tenn., assignor to Texas Boot Company, Cincinnati, Ohio
Filed Feb. 19, 1981, Ser. No. 235,890
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—273

268,626
COMBINED SKI AND BOOT CARRIER
Joseph A. Spollino, 1453 N. Cleveland Ave., Orange, Calif. 92667, and Ronald A. Spollino, 4255 S. Tamarus St. #109, Las Vegas, Nev. 89109
Filed Nov. 3, 1980, Ser. No. 203,262
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D3—36

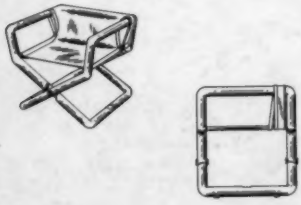


268,627
LUGGAGE
Ted Stark, Jersey City, N.J., assignor to M & M Luggage Co., Inc., Jersey City, N.J.
Filed Feb. 4, 1981, Ser. No. 231,424
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71

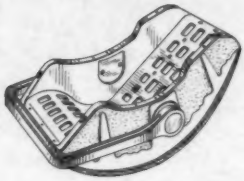
268,628
LUGGAGE
Ted Stark, Jersey City, N.J., assignor to M & M Luggage Co., Inc., Jersey City, N.J.
Filed Feb. 17, 1981, Ser. No. 235,002
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71

268,629
LUGGAGE
Ted Stark, Jersey City, N.J., assignor to M & M Luggage Co., Inc., Jersey City, N.J.
Filed Apr. 6, 1981, Ser. No. 251,094
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71

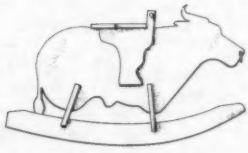
268,630
PORTABLE BOOSTER SEAT
Michael C. Wilson, Glen Ellyn, Ill., assignor to The Tyke Corporation, Chicago, Ill.
Filed Mar. 12, 1981, Ser. No. 243,242
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—9



268,631
ROCKABLE INFANT SEAT
Edward M. Johnson, Jr., Matteson, Ill., assignor to Kolcraft Products, Inc., Chicago, Ill.
Filed Feb. 26, 1981, Ser. No. 238,457
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—10

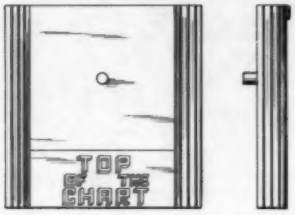


268,632
CHILD'S ROCKING CHAIR OR SIMILAR ARTICLE
Robert E. Gentry, 7504 Deer Tract Dr., Raleigh, N.C. 27612
Filed Jan. 22, 1981, Ser. No. 227,516
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—11

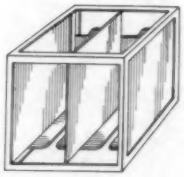


268,633
ROCKING CHAIR
Thomas P. Sauls, P.O. Box 1138, and Douglas M. Lane, P.O. Box 657, both of Dunnellon, Fla. 32630
Division of Ser. No. 13,032, Feb. 21, 1979. This application Dec. 22, 1980, Ser. No. 219,236
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—49

268,634
MOUNTABLE RECORD DISPLAY DEVICE
Dennis J. Fontana, 18 Davison Pl., Rockville Centre, N.Y. 11570
Filed Oct. 2, 1980, Ser. No. 192,985
Term of patent 14 years
Int. Cl. D6—*06*; D11—*02*
U.S. Cl. D6—114

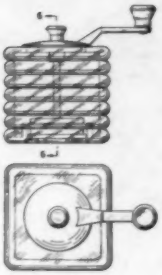


268,635
DISPOSABLE DIAPER RACK
Mary A. Redwine, P.O. Box 17399, Euclid, Ohio
Filed Aug. 25, 1980, Ser. No. 180,954
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—130

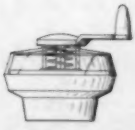


268,636
CHAIR PANEL
James W. Hull, Huntington Beach, Calif., assignor to H. W. Hull & Sons, Inc., Gardena, Calif.
Division of Ser. No. 166,377, Jul. 7, 1980. This application Jan. 29, 1982, Ser. No. 343,965
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—193

268,637
CONDIMENT MILL
David A. Cowan, London, England, assignor to Cole & Mason, USA, Ltd., Great Neck, N.Y.
Filed Jul. 30, 1980, Ser. No. 173,845
Claims priority, application United Kingdom, Jan. 31, 1980, 993381
Term of patent 14 years
Int. Cl. D07—*06*
U.S. Cl. D7—53

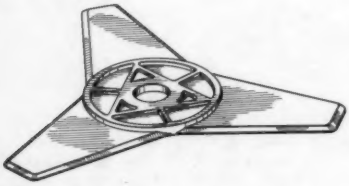


268,638
NUTMEG GRATER
William E. Bounds, 3737 W. 240th St., Torrance, Calif. 90505
Filed Oct. 27, 1980, Ser. No. 200,938
Term of patent 14 years
Int. Cl. D07—*06*
U.S. Cl. D7—53



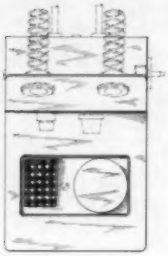
268,639
PUMPKIN CARVING KNIFE
Donald R. Johannsen, 26110 Michigan Ave., Inkster, Mich. 48141
Filed Aug. 3, 1981, Ser. No. 289,535
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—143

268,640
TRIM BLADE FOR LAWNS AND THE LIKE
Anthony G. Bonforte, P.O. Box 1844, Rancho Santa Fe, Calif. 92069
Filed Aug. 14, 1980, Ser. No. 178,023
Term of patent 14 years
Int. Cl. D8—*03;* D15—*03*
U.S. Cl. D8—08

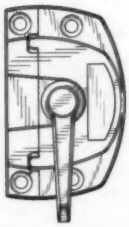


268,641
TRIM BLADE FOR LAWNS AND THE LIKE
Anthony G. Bonforte, P.O. Box 1844, Rancho Santa Fe, Calif. 92069
Filed Aug. 14, 1980, Ser. No. 178,376
Term of patent 14 years
Int. Cl. D8—*03;* D15—*03*
U.S. Cl. D8—08

268,642
COMBINED POWER SUPPLY, TOOL HOLDER AND SUPPORT THEREFOR
Jean C. Fielder, Silver Spring, Md., assignor to Pace Incorporated, Laurel, Md.
Filed May 5, 1980, Ser. No. 146,287
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—71

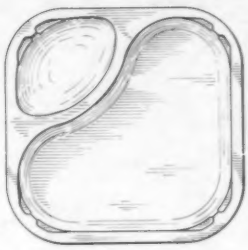


268,643
COMBINED CHECK RAIL LOCK AND KEEPER
Donald L. Anderson, Owatonna, Minn., assignor to Truth Incorporated, Owatonna, Minn.
Filed Dec. 29, 1981, Ser. No. 220,297
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—337



268,644
COMBINATION LOCK FENCE LEVER WITH ECCENTRIC ROLLER NOSE
Harry C. Miller, Nicholasville, Ky., assignor to Sargent & Greenleaf, Inc., Nicholasville, Ky.
Filed Nov. 5, 1980, Ser. No. 204,258
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—343

268,645
PACKAGING CONTAINER FOR FOOD
Wyatt L. Phillips, and Ronald D. Schooler, both of Tulsa, Okla., assignors to QuikTrip Corporation, Tulsa, Okla.
Filed Dec. 15, 1980, Ser. No. 216,086
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—341

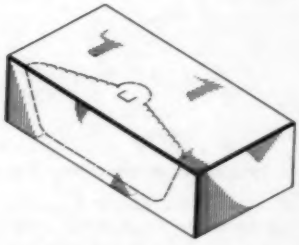


268,646
PACKAGING TRAY OR THE LIKE
Isaac J. Hudson, Jr., Bayboro, Pamlico County, N.C. 28515
Filed Nov. 17, 1980, Ser. No. 207,365
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—347

268,647
COSMETIC CONTAINER
Ted I. Kingsford, Memphis, Tenn., assignor to Plough, Inc., Memphis, Tenn.
Filed Feb. 5, 1981, Ser. No. 231,700
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—389

268,648
PACKAGING CONTAINER
Sven O. S. Stark, Rydsgård, Sweden, assignor to Tetra Pak International AB, Lund, Sweden
Filed Apr. 11, 1979, Ser. No. 28,995
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—416

268,649
PACKAGING CONTAINER
Gerhard Adamson, West Milford, and Walter F. Rousseau, Glen Rock, both of N.J., assignors to Union Carbide Corporation, Danbury, Conn.
Filed Aug. 20, 1980, Ser. No. 179,814
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—416

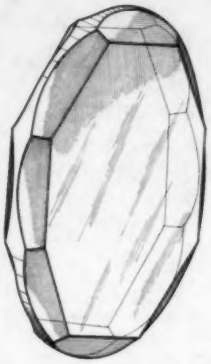


268,650
DISPENSER CAP
Dale J. Kirstine, San Juan Capistrano, Calif., assignor to Kirstine/Hendricks, Irvine, Calif.
Filed Feb. 27, 1981, Ser. No. 238,698
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—450

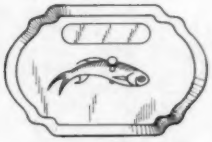
268,651
INFANT THERMOMETER
Barbara Doyle, 8585 Burton Way, Suite 310, Los Angeles, Calif. 90048
Filed Dec. 9, 1980, Ser. No. 214,503
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—57

268,652
MEDAL
Emile Rousseau, Paris, France, assignor to Helior S.A., Geneva, Switzerland
Filed Nov. 21, 1980, Ser. No. 209,117
Claims priority, application Hague, May 23, 1980, DM/000 202
Term of patent 14 years
Int. Cl. D11—*03*
U.S. Cl. D11—102

268,653
ORNAMENT
George C. Sun, 530 Rhode Island Ave., Cherry Hill, N.J. 08002
Filed Nov. 14, 1980, Ser. No. 206,571
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—121



268,654
PLAQUE WITH MINNOW
Charles H. Allgood, II, 3886 Healy Rd., Memphis, Tenn. 38111
Filed Oct. 20, 1980, Ser. No. 198,823
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—134



268,655
STAG-BEETLE FIGURE
Tatsuya Kodaka, 25-6 Wakamiya 1-chome, Nakano-ku, Tokyo, Japan
Filed Jun. 9, 1981, Ser. No. 271,841
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—162

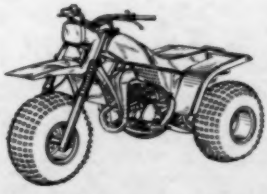
268,656
BEETLE FIGURE
Tatsuya Kodaka, 25-6 Wakamiya 1-chome, Nakano-ku, Tokyo, Japan
Filed Jun. 9, 1981, Ser. No. 271,842
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—162

268,657
BUTTERFLY FIGURE
Tatsuya Kodaka, 25-6, Wakamiya 1-chome, Nakano-ku, Tokyo, Japan
Filed Jun. 5, 1981, Ser. No. 270,976
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—162

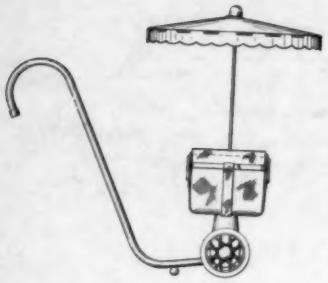
268,658
AUTOMOBILE
Morley L. Smith, Jr., Beaconsfield, Canada, assignor to Guillon, Smith, Marquart & Associes Ltee, Montreal, Canada
Continuation-in-part of Ser. No. 38,869, May 14, 1979, Pat. No. Des. 260,627. This application May 26, 1981, Ser. No. 267,401
Claims priority, application Canada, May 2, 1979, 02-05-79-1
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—91

268,659
AUTOMOBILE
Merlin F. Reaume, New York, N.Y., assignor to Standard Motors, Inc., New York, N.Y.
Filed Oct. 27, 1980, Ser. No. 200,849
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—92

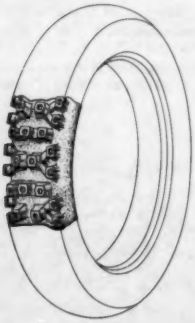
268,660
MOTORTRICYCLE
Yasuhiro Ohba, Kamifukuoka, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 23, 1980, Ser. No. 171,402
Claims priority, application Japan, Jan. 24, 1980, 55-1841
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—110



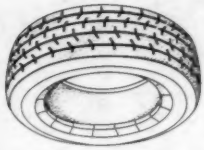
268,661
STROLLER
Philip D. Bart, 9864 NW. 13th Ct., Coral Springs, Fla. 33065
Filed Sep. 22, 1980, Ser. No. 189,642
Term of patent 14 years
Int. Cl. D12—*12*
U.S. Cl. D12—129



268,662
TIRE FOR A VEHICLE WHEEL
Hisashi Shirashoji, Kobe, Japan, assignor to Dunlop Limited, London, England
Filed Jul. 9, 1980, Ser. No. 167,001
Claims priority, application Japan, Jan. 19, 1980, 55-001121
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—140



268,663
TIRE FOR A VEHICLE WHEEL
Brian S. Bennett, Barton-Under-Needwood, England, assignor to Dunlop Limited, London, England
Filed Sep. 10, 1980, Ser. No. 185,958
Claims priority, application United Kingdom, Mar. 22, 1980, 994168
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—145



268,664
MOTORIZED REAR VIEW MIRROR
Bernard C. Sharp, White Plains, N.Y., assignor to Parker-Hannifin Corporation, Shelton, Conn.
Filed Dec. 22, 1980, Ser. No. 218,960
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—187

268,665

MOTORIZED TRUCK MIRROR

Bernard C. Sharp, White Plains, N.Y., assignor to Parker-Hannifin Corporation, Shelton, Conn.

Filed Dec. 22, 1980, Ser. No. 218,961

Term of patent 14 years

Int. Cl. D12—*16*

U.S. Cl. D12—187

268,666

HEAT SINK OR SIMILAR ARTICLE

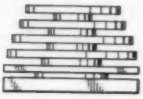
Marvin F. Moore, Carrollton, Tex., assignor to Thermalloy Incorporated, Dallas, Tex.

Filed May 18, 1981, Ser. No. 264,935

Term of patent 14 years

Int. Cl. D13—*03*

U.S. Cl. D13—23



268,667

HEAT SINK OR SIMILAR ARTICLE

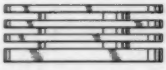
William D. Jordan, Dallas, and Marvin F. Moore, Carrollton, both of Tex., assignors to Thermalloy Incorporated, Dallas, Tex.

Filed May 28, 1981, Ser. No. 264,936

Term of patent 14 years

Int. Cl. D13—*03*

U.S. Cl. D13—23



268,668

CONTROL PANEL FOR ELEVATOR SYSTEMS

Ernest M. Bevilaqua, Wilton; Allan L. McCroskery, Weston, both of Conn., and Theodore N. Kserr, New York, N.Y., assignors to Otis Elevator Company, Farmington, Conn.

Filed Feb. 2, 1981, Ser. No. 230,841

Term of patent 14 years

Int. Cl. D13—*03;* D10—*06*

U.S. Cl. D13—35

268,669

COMBINED SWITCH HOUSING AND INTEGRAL MOUNTING BRACKET

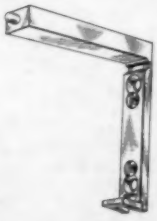
Thomas J. Holce, Portland, and Charles M. Huckins, Tigard, both of Oreg., assignors to Sentrol, Inc., Portland, Oreg.

Filed Aug. 12, 1980, Ser. No. 177,521

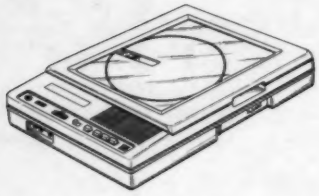
Term of patent 14 years

Int. Cl. D13—*03*

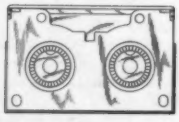
U.S. Cl. D13—38



268,670
AUDIO-VISUAL SHEET PLAYER
Masao Iwaoka; Yousuke Igeta, and Fumio Kobayashi, all of Tokyo, Japan, assignors to Gakken Co., Ltd. (Kabushiki Kaisha Gakushu Kenkyusha), Tokyo, Japan
Filed Oct. 6, 1980, Ser. No. 193,893
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—1

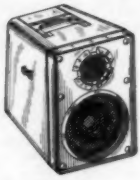


268,671
VIDEO TAPE CASSETTE
Toshio Ohya, Tokyo, and Masaharu Kobayashi, Ohmiya, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Nov. 10, 1980, Ser. No. 205,640
Claims priority, application Japan, Jun. 23, 1980, 55-25018
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—11



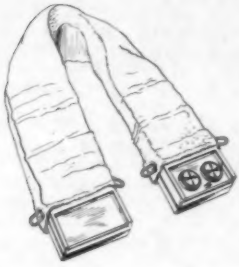
268,672
ADAPTER MOUNT FOR MICROPHONES AND THE LIKE
Mathew A. McPherson, 5817 Olinger Rd., Edina, Minn. 55436
Filed Jul. 3, 1980, Ser. No. 165,685
Term of patent 14 years
Int. Cl. D14—*99*
U.S. Cl. D14—13

268,673
LOUDSPEAKER
Takekazu Iijima, Tokyo, Japan, assignor to Pioneer Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 2, 1980, Ser. No. 212,130
Claims priority, application Japan, Jun. 2, 1980, 55-21912
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—34

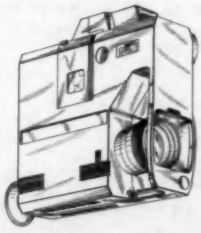


268,674
DECORATIVE SHELL COVER FOR TELEPHONES
John S. Jordan, Roswell, Ga., assignor to Jordan Concepts, Inc., Roswell, Ga.
Filed Jul. 17, 1980, Ser. No. 169,908
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—60

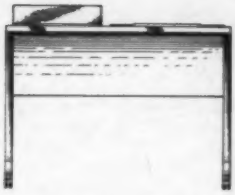
268,675
RADIO RECEIVER
William J. Hass, 3707 Russett La., Northbrook, Ill. 60062
Filed Nov. 3, 1980, Ser. No. 203,342
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—68



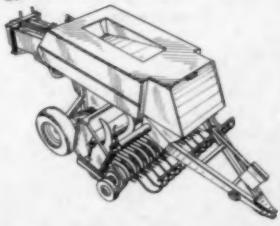
268,676
VIDEO CAMERA WITH VIDEO TAPE RECORDER
Toshio Ohya, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Nov. 10, 1980, Ser. No. 205,307
Claims priority, application Japan, Jun. 12, 1980, 55-023426
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—78



268,677
ELECTRONIC COMPUTER
Yoshihisa Ohie; Akira Enaki; Masaji Sawada, and Tsutomu Yamazaki, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Jul. 8, 1980, Ser. No. 166,896
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—103

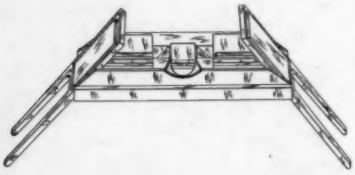


268,678
BALER
Edward L. Swenson, Hesston; Allen K. Roth, Whitewater; Larry B. Jones, Anthony, and Richard J. Robbins, Derby, all of Kans., assignors to Hesston Corporation, Hesston, Kans.
Filed Oct. 14, 1980, Ser. No. 196,354
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—27

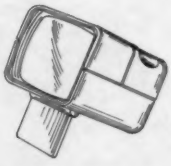


268,679
HOUSING FOR A PORTABLE BAG CLOSING SEWING MACHINE
David B. Johnson, and Verdell H. Schroeder, both of Minneapolis, Minn., assignors to Bliss & Laughlin Industries Incorporated, Minneapolis, Minn.
Filed Feb. 11, 1980, Ser. No. 120,549
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D15—76

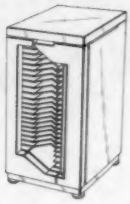
268,680
MIRROR STEREOSCOPE
Francesco Smargiassi, 21 Greenshields St., Albany, Western Australia, Australia
Filed Jun. 20, 1980, Ser. No. 161,283
Term of patent 14 years
Int. Cl. D16—*99*
U.S. Cl. D16—12



268,681
SLIDE VIEWER
Rudolph Hanke, Monheim, Fed. Rep. of Germany, assignor to Hama Hamaphot KG, Monheim, Fed. Rep. of Germany
Filed Nov. 13, 1980, Ser. No. 206,432
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—17



268,682
SORTER FOR ELECTROSTATIC COPIER
Kenichi Nakade, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Filed Sep. 11, 1980, Ser. No. 186,275
Claims priority, application Japan, Mar. 11, 1980, 55-9351
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—32

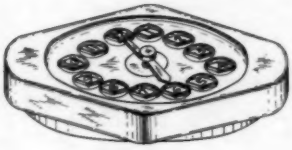


268,683
PAIR OF SAFETY SPECTACLES
Dale E. Tenny, Vernon, Conn., assignor to American Optical Corporation, Southbridge, Mass.
Filed Aug. 28, 1980, Ser. No. 182,278
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—102

268,684
PAIR OF SPECTACLES
David P. Chuboff, North Barrington; Francis J. Greb, Palatine, and Tom Takeuchi, Mount Prospect, all of Ill., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Dec. 29, 1980, Ser. No. 221,079
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—102

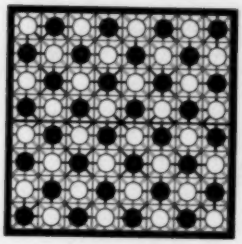
268,685
GUITAR HEAD
Makoto Seshimoto, Hamamatsu, Japan, assignor to Tokai Gakki Company, Ltd., Hamamatsu, Japan
Filed Jun. 30, 1980, Ser. No. 164,679
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—20

268,686
CHILDREN'S CLOCK
Dieter Wolf, Hattersheim, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany
Filed Sep. 22, 1980, Ser. No. 189,544
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—64



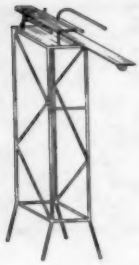
268,687
STIRRUP FOR SUSPENDING BOOKS, PAPERS AND THE LIKE ON THE FACE OF AN INCLINED DRAWING BOARD
James C. Rogers, 144 Main St., Lakeville, Mass. 02346
Filed Feb. 23, 1981, Ser. No. 236,827
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D19—91

268,688
GAME BOARD OR SIMILAR ARTICLE
Robert L. Johnson, 3655 Pruneridge #261, Santa Clara, Calif. 95051
Filed Apr. 24, 1981, Ser. No. 257,326
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—34



268,689
REMOTE CONTROL UNIT FOR ELECTRONIC GAME
Roy M. Nishi, San Jose, Calif., assignor to Atari, Inc., Sunnyvale, Calif.
Filed Jan. 8, 1981, Ser. No. 223,651
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—48

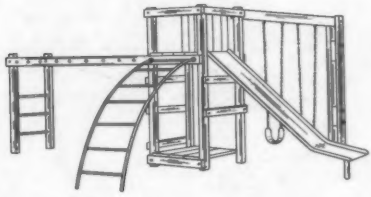
268,690
TOY DIVING BOARD
William G. Bennett, P.O. Box 393, Slidell, La. 70458
Filed Jun. 3, 1980, Ser. No. 156,053
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—109



268,691
GOLF CLUB
Christopher K. Collins, 61 Hilton St., Manchester, M1 2EJ, England
Filed Nov. 3, 1980, Ser. No. 203,755
Claims priority, application United Kingdom, May 3, 1980, 994766
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—217

268,692
STUFFED DRAGON-LIKE ANIMAL
Barbara A. D. Thorndike, Meredith, N.H., assignor to Annalee Mobilitee Dolls, Inc., Meredith, N.H.
Filed Sep. 29, 1980, Ser. No. 192,046
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—148

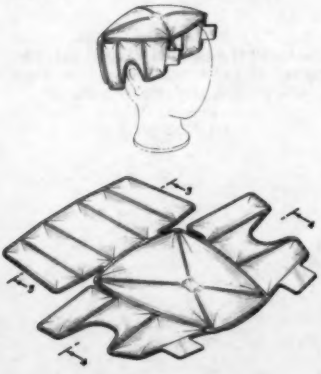
268,693
OUTDOOR RECREATIONAL DEVICE
Michael L. Works, 7814 N. Blvd., Tampa, Fla. 33604
Filed May 30, 1980, Ser. No. 154,766
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—244



268,694
KNIFE
Lasse Liukko, Lahti, and Pentti Maunu, Rovaniemi, both of Finland, assignors to J. Marttiinin Puukkotehdas Oy, Rovaniemi, Finland
Filed Apr. 10, 1979, Ser. No. 28,711
Claims priority, application Finland, Oct. 11, 1978, 63078
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D22—1

268,695
DEER SCENT DISPENSER
John W. Kolf, Rolling Meadows, Ill., assignor to K. G. M. Corporation, Palatine, Ill.
Filed Nov. 24, 1980, Ser. No. 209,382
Term of patent 14 years
Int. Cl. D22—*99*
U.S. Cl. D22—99

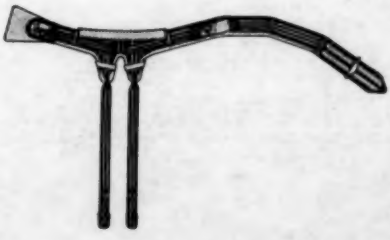
268,696
SCALP HYPOTHERMIA CAP
Mark Bowen, 919 Chantilly Rd., Los Angeles, Calif. 90024
Filed Aug. 18, 1980, Ser. No. 179,034
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—34



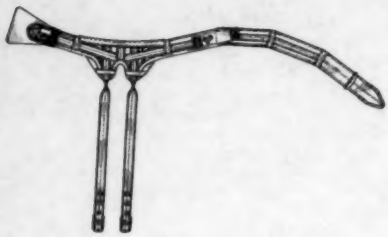
268,697
GUM-CLEANING IMPLEMENT
Michelene F. Bukowski, Los Angeles, Calif., assignor to Mark F. Bukowski, Salt Lake City, Utah
Filed Sep. 2, 1980, Ser. No. 183,412
Term of patent 14 years
Int. Cl. D28—*02*
U.S. Cl. D24—36

268,698
IV SPIKE AND DROP FORMER HOUSING
Wallace L. Knute, San Diego, Calif., assignor to Ivac Corporation, San Diego, Calif.
Filed Nov. 7, 1980, Ser. No. 204,774
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—52

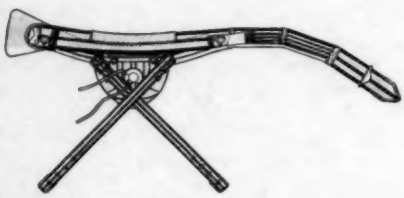
268,699
HERNIAL BELT
Pierre M. Sailhen, Lyons, France, assignor to Ormihl, Lyons, France
Filed Aug. 18, 1980, Ser. No. 179,363
Term of patent 14 years
Int. Cl. D24—*04, 99*
U.S. Cl. D24—64



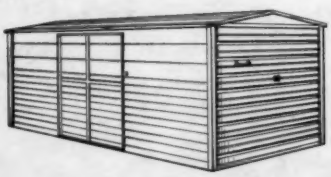
268,700
HERNIAL BELT
Pierre M. Sailhen, Lyons, France, assignor to Ormihl, Lyons, France
Filed Aug. 18, 1980, Ser. No. 179,362
Term of patent 14 years
Int. Cl. D24—*04, 99*
U.S. Cl. D24—64



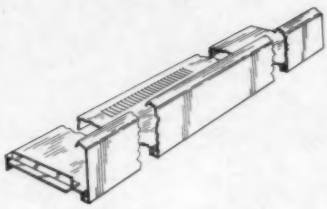
268,701
HERNIAL BELT
Pierre M. Sailhen, Lyons, France, assignor to Ormihl, Lyons, France
Filed Aug. 18, 1980, Ser. No. 179,364
Term of patent 14 years
Int. Cl. D24—*04, 99*
U.S. Cl. D24—64



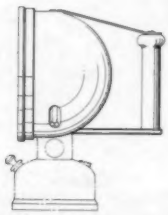
268,702
PORTABLE GARAGE
Harry L. Todd, 11233 Tierrasanta Blvd., San Diego, Calif. 92124
Filed Aug. 11, 1980, Ser. No. 176,845
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—22



268,703
COMBINED SOFFIT AND FASCIA PANEL
Robert Lloyd-Jones, Redcliffe, Australia, assignor to Salkhad Pty. Ltd., Brisbane, Australia
Filed Nov. 25, 1980, Ser. No. 210,264
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—55

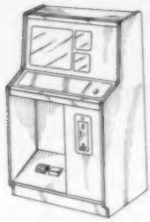


268,704
REFLECTOR
Harry E. James, Jr., 75 Forbes Rd., Bedford, Ohio 44146
Filed Jul. 23, 1980, Ser. No. 171,313
Term of patent 14 years
Int. Cl. D26—*05, 02*
U.S. Cl. D26—118

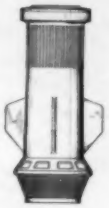


268,705
COMBINED AQUARIUM AND COVER
Jessie R. Clayton, P.O. Box 782, Mabank, Tex. 75147
Filed Oct. 6, 1980, Ser. No. 193,969
Term of patent 14 years
Int. Cl. D30—*2*
U.S. Cl. D30—6

268,706
SHOE SOLE CLEANING MACHINE
Max Muller, 10920 W. 100 Terr., Overland Park, Kans. 66214, and James F. Corn, 5032 Clark Dr., Roeland Park, Kans. 66205
Filed Nov. 24, 1980, Ser. No. 209,871
Term of patent 14 years
Int. Cl. D15—05
U.S. Cl. D32—01



268,707
FILTER FOR AUTOMATIC WASHER AGITATOR OR SIMILAR ARTICLE
William Ohmann, and Edward E. Wiesner, both of St. Joseph, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Jul. 1, 1980, Ser. No. 165,133
Term of patent 14 years
Int. Cl. D15—05
U.S. Cl. D32—26



268,708
WALL COVERING
Florence J. Marganne, Paris, France, assignor to Peinture Corona S.A., Valenciennes, France
Filed Nov. 10, 1980, Ser. No. 205,644
Claims priority, application France, May 9, 1980, 801,516
Term of patent 14 years
Int. Cl. D05—06
U.S. Cl. D92—25

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 19TH DAY OF APRIL, 1983

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Abbott, Frederick H. Trailer hitch cycle rack. 4,380,344, Cl. 280-402.000.

Abbott, Joseph L. Thermal barrier for windows. 4,380,140, Cl. 52-202.000.

Abduganiev, Abdurakhim; Tikhonov, Valentin N.; Shlykov, Gennady N.; Zhestkov, Vitaly I.; Krjuk, Timur P.; Mukhin, Viktor M.; and Tikhonov, Jury N. Device for withdrawing rotor of spindleless spinning machine to inoperative position. 4,380,143, Cl. 57-89.000.

Abraham, Uwe; Jakubowski, Karl-Heinz; and Koster, Wilhelm. Holding a planetary gear carrier relative to an axle. 4,380,274, Cl. 180-308.000.

Adamek, Manfred; and Rinneburger, Klaus, to U.S. Philips Corporation. Flexible disk drive. 4,380,783, Cl. 360-99.000.

Adamis, Robert J. Cooking cone. 4,380,190, Cl. 99-345.000.

Adler, Ralph P. I.; Gorsuch, Thomas J.; Murty, Yellapu V.; and Woronicki, Alexander R., to GTE Laboratories Incorporated. Apparatus for double roller chill casting of continuous metal foil. 4,380,262, Cl. 164-423.000.

Advance Biofactures Corp.: *See*—
Wiesner, Karel; and Tsai, Thomas Y. R., 4,380,624, Cl. 536-5.000.

Agency of Industrial Science and Technology: *See*—
Nakamura, Osamu; Ogino, Isao; and Kodama, Teruo, 4,380,575, Cl. 429-13.000.

Ager, John W., to FMC Corporation. Methyl isocyanate emission control. 4,380,665, Cl. 564-61.000.

Agfa-Gevaert Aktiengesellschaft: *See*—
Engelsmann, Dieter; Hoffacker, Franz; Kovacic, Guido; Lermann, Peter; Luhrig, Hermann; and Wagner, Karl, 4,380,382, Cl. 354-275.000.

Aggregates Equipment, Inc.: *See*—
de Bruijn, Hans, 4,380,282, Cl. 198-318.000.

Agrawal, Purushottam D., to Monsanto Company. Forming non-cylindrical articles from preforms of polyalkylene terephthalate. 4,380,526, Cl. 264-537.000.

Ahern, John; Farmer, Wayne; Hawes, David; and McEvoy, Herbert J., Jr., to Fairfield Optical Company, Inc. Optometric device. 4,380,379, Cl. 351-106.000.

Ainoura, Masato. Shaving cutter. 4,380,411, Cl. 407-27.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Masai, Hiroto, 4,380,279, Cl. 192-58.00B.

Aizawa, Tatsuo: *See*—
Kato, Yoshiaki; Fushida, Akira; Ueda, Yasuo; Tohi, Yasusuke; and Aizawa, Tatsuo, 4,380,196, Cl. 101-453.000.
Matsumoto, Shoji; Matsui, Toshikazu; Ikeda, Toshimitsu; Kozuka, Nobuhiko; Nishihama, Hitoshi; and Aizawa, Tatsuo, 4,380,579, Cl. 430-126.000.

Akzona Incorporated: *See*—
Siggel, Erhard; Wick, Gerhard; Linhart, Heinz; and Kessler, Erich, 4,380,594, Cl. 521-182.000.

Alejandro Llera, Santos A. A., to Precision Plastic Products Corporation. Tamper proof closure. 4,380,299, Cl. 215-252.000.

Algieri, Aldo A.: *See*—
Crenshaw, Ronnie R.; and Algieri, Aldo A., 4,380,638, Cl. 548-135.000.
Crenshaw, Ronnie R.; and Algieri, Aldo A., 4,380,639, Cl. 548-135.000.

Alker, Dietrich E., to Wandel U. Goltermann GmbH & Co. System for monitoring the operation of individual connectors in a multipath coupling network. 4,380,731, Cl. 324-51.000.

Allan Air Products, Inc.: *See*—
Ludwig, David, 4,380,270, Cl. 173-163.000.

Allard, Pierre-Yves; and Leconte, Gilles, to Regie Nationale des Usines Renault. Speed control for an automobile. 4,380,799, Cl. 364-426.000.

Allen, David O.; and Wombold, Harry A. E., to Buckeye Molding Company. Molded container and opening means therefore. 4,380,303, Cl. 220-276.000.

Allerton, George L., to Western Electric Company, Inc. Measuring magnetic intensity independent of speed in a succession of moving magnetic strips. 4,380,734, Cl. 324-225.000.

Allied Corporation: *See*—
Mathew, Chempolil T.; and Ulmer, Harry E., 4,380,660, Cl. 556-422.000.

Allis-Chalmers Corporation: *See*—
Chacour, Selim A.; and Degnan, John R., 4,380,401, Cl. 384-438.000.

Allison, Debra L.: *See*—
Witzel, Bruce E.; Finke, Paul E.; and Allison, Debra L., 4,380,645, Cl. 548-430.000.

Alps Electric Co., Ltd.: *See*—
Hirose, Yasuyuki; Shimaoka, Motohiro; Saito, Shoichiro; and Kowaguchi, Toru, 4,380,782, Cl. 360-99.000.
Hori, Fumihisa; and Miyajima, Mikio, 4,380,195, Cl. 101-93.170.

Alsthom-Atlantique: *See*—
Roger, Gillet; and Henri, Nithart, 4,380,713, Cl. 310-214.000.

Ambrus, Valeria; and Karsai, Henrik, to Ganz Muszer Muvek. Equipment for the measurement of evaporation and/or precipitation. 4,380,248, Cl. 137-428.000.

American Home Products Corporation: *See*—
Sarantakis, Dimitrios; and Dvonch, William, 4,380,535, Cl. 424-177.000.

America's Cup, Inc.: *See*—
Harr, Robert G.; and Soli, Gaylord T., 4,380,441, Cl. 441-112.000.

Ammermann, Eberhard: *See*—
Sauter, Hubert; Ammermann, Eberhard; Rentzea, Costin; Zeeh, Bernd; Jung, Johann; and Pommer, Ernst-Heinrich, 4,380,546, Cl. 424-269.000.

AMP Incorporated: *See*—
Asick, John C.; Berry, Donald A.; and Lucius, John E., 4,380,361, Cl. 339-91.00R.
Brandewie, Joseph E.; and Hart, Granville S., 4,380,117, Cl. 29-742.000.
Driver, Donald E.; and Kaufman, John W., 4,380,118, Cl. 29-747.000.
Parmer, Kenneth R.; and Stape, William J., 4,380,360, Cl. 339-17.0CF.
Smith, Terry J., 4,380,171, Cl. 73-161.000.

Amtel, Friedrich-Wilhelm, to Carl Freudenberg, Firma. Flexible coupling. 4,380,442, Cl. 464-93.000.

Anatros Corporation: *See*—
Danby, Hal C., 4,380,235, Cl. 604-251.000.

Anderson, George C. Container having an integral handle an a closure. 4,380,304, Cl. 220-306.000.

Ando, Kunio: *See*—
Kaku, Masaro; Sawaki, Yasumasa; and Ando, Kunio, 4,380,729, Cl. 323-285.000.

Ando, Takao: *See*—
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Arpin, John, to Arpin Products, Inc. Encapsulating sealant compositions for friable insulation materials. 4,380,595, Cl. 524-5.000.

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Koocher, Martin, 4,380,587, Cl. 436-128.000.

Aruga, Masayoshi: *See*—
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Eisman, Norman L., 4,380,301, Cl. 220-73.000.

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Au, Kenneth K., to Motorola, Inc. Switched-supply three-state circuit. 4,380,709, Cl. 307-473.000.

Auerbach, David R., to Pitney Bowes Inc. Workpiece moistening system. 4,380,210, Cl. 118-253.000.

Ayers, Ray R., to Shell Oil Company. Jackup platform trailer. 4,380,406, Cl. 405-206.000.

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Azanda, Via K.: *See*—
Karklin, Roman Y.; Rumba, Alma A.; and Azanda, Via K., 4,380,583, Cl. 435-242.000.

B. Bunch Company, Inc.: *See*—
Bunch, Earnest B., Jr., 4,380,448, Cl. 493-410.000.

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Minchak, Robert J.; Kettering, Timothy J.; and Kroenke, William J., 4,380,617, Cl. 526-161.000.

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LaRue, Albert D.; and Wolf, John J., 4,380,202, Cl. 110-263.000.

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Back, Frank G. Episcopic projector. 4,380,380, Cl. 353-66.000.

Bahary, William S., to Duracell Inc. Electrochemical cell with gelled anode. 4,380,578, Cl. 429-206.000.

Baitis, A. Erich; and Woolaver, Dennis A., to United States of America, Navy. Ship roll stabilization system. 4,380,206, Cl. 114-122.000.

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Balz, Gunther W., to Roto-Finish Company, Inc. Self-separating finishing machine having variable degrees of rotation and vibration, and method. 4,380,137, Cl. 51-163.100.

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Kraus, Thaddaus, 4,380,212, Cl. 118-720.000.

Bankert, Ralph A., to Hercules Incorporated. Epihalohydrin modified dicyandiamide-formaldehyde condensates and process for preparing the same. 4,380,603, Cl. 524-598.000.

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Hill, John; and Bannister, Royston W., 4,380,748, Cl. 335-151.000.

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Baruzzi, Giovanni: *See*—
Noristi, Luciano; and Baruzzi, Giovanni, 4,380,507, Cl. 252-429.00B.

BASF Aktiengesellschaft: *See*—
Bott, Kaspar, 4,380,631, Cl. 544-275.000.
Loeffler, Hermann; Juenemann, Werner; and Lamm, Gunther, 4,380,452, Cl. 8-532.000.
Rieber, Norbert; Platz, Rolf; and Fuchs, Werner, 4,380,642, Cl. 548-255.000.
Sauter, Hubert; Ammermann, Eberhard; Rentzea, Costin; Zeeh, Bernd; Jung, Johann; and Pommer, Ernst-Heinrich, 4,380,546, Cl. 424-269.000.
Seybold, Guenther, 4,380,514, Cl. 260-465.00H.

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Kamen, Dean, 4,380,234, Cl. 604-180.000.
Norton, William W., 4,380,236, Cl. 604-151.000.

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Ziegler, Michael L., II; Druke, Michael B.; Van Roekel, John R.; and Baxter, Ward, II, 4,380,812, Cl. 371-38.000.

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Elbe, Hans-Ludwig, 4,380,628, Cl. 542-429.000.
Kraatz, Udo; Jager, Gerhard; Buchel, Karl H.; and Frohberger, Paul-Ernst, 4,380,545, Cl. 424-269.000.
Materne, Carsten, 4,380,547, Cl. 424-270.000.
Maurer, Fritz; Schroder, Rolf; Hammann, Ingeborg; and Stendel, Wilhelm, 4,380,538, Cl. 424-200.000.
Muller, Hanns P.; Sommerfeld, Claus-Dieter; and Becker, Gernot, 4,380,502, Cl. 252-182.000.
Neuhaus, Karl-Friedrich; Perrey, Hermann; Fuhr, Karl; Freier, Hans-Joachim; and Bendszus, Otto, 4,380,604, Cl. 524-873.000.
Stadler, Peter; Koebernick, Wolfgang; Samaan, Samir; and Gau, Wolfgang, 4,380,625, Cl. 536-13.900.
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von Bonin, Wulf; and Zaby, Gottfried, 4,380,593, Cl. 521-163.000.

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Gessinger, Gernot; and Mercier, Olivier, 4,380,574, Cl. 428-686.000.
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Poyser, Robert H.; and Turner, David H., 4,380,540, Cl. 424-233.000.

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Canniff, Ronald J., 4,380,810, Cl. 370-15.000.
Marcatili, Enrique A. J., 4,380,364, Cl. 350-96.140.

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Ben Venue Laboratories, Inc.: *See*—
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Normann, Richard W.; and Fairbairn, LeRoy W., 4,380,119, Cl. 29-884.000.
Van Siclen, Howard E., Jr., 4,380,224, Cl. 123-602.000.
Wilkinson, John R., 4,380,800, Cl. 364-431.080.

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Bennett, William G.; and Spease, Arthur L., to Teleflex Incorporated. Remote control assembly (swivel insert). 4,380,178, Cl. 74-501.00P.

Berger, Jenson and Nicholson Ltd.: *See*—
Tooke-Kirby, David H.; Perry, Richard E.; and Arbuckle, Kenneth H., 4,380,599, Cl. 525-370.000.

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Bianchi, Nereo, to NECCHI S.p.A. Devices generating synchronizing signals in sewing machines. 4,380,203, Cl. 112-158.00E.
Bichard, Bernard: *See*—
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Bigelow, Stanley K., to Champion International Corporation. Paperboard dispenser package with removable scoop panel. 4,380,289, Cl. 206-216.000.
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Blair, Albert; and Grant, Patrick T., to National Research Development Corporation. Rotatable fish cage. 4,380,213, Cl. 119-3.000.
Blanchard, Houston F.; and Tuchscherer, Lawrence D., to General Motors Corporation. Roller band sensor. 4,380,692, Cl. 200-61.45R.
Blocher, John M., Jr.; Veigel, Neil D.; and Landrigan, Richard B., to United States of America, Energy. Vapor deposition of hardened niobium. 4,380,556, Cl. 427-6.000.
Block, Gordon. Truck box tarpaulin assembly. 4,380,350, Cl. 296-98.000.
Blount, David H. Process for the production of polyhydroxy lignin-cellulose silicate polymer. 4,380,592, Cl. 521-151.000.
Blue Streak Industries, Inc.: *See*—
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Boden, Richard M., to International Flavors & Fragrances Inc. Branched chain olefinic alcohols, thiols, esters and ethers, organoleptic uses thereof, processes for preparing same and intermediates thereof. 4,380,500, Cl. 252-174.110.
Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., to International Flavors & Fragrances Inc. Mixture of aliphatic C_{10}-branched olefin epoxides and use thereof in augmenting or enhancing the aroma of perfumes and/or articles. 4,380,658, Cl. 549-525.000.
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Bodimer, Theodore B.; David, Joseph S.; and Calder, Alexander W., to Joy Manufacturing Company. Conveyor. 4,380,288, Cl. 198-820.000.
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Boggs, David R., to Xerox Corporation. Digital phase decoder with collision detection. 4,380,761, Cl. 340-825.500.
Boguslaski, Robert C.; Carrico, Robert J.; and Christner, James E., to Miles Laboratories, Inc. Heterogenous chemiluminescent specific binding assay. 4,380,580, Cl. 435-7.000.
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Bosne, Jacques G. P. E., to Hamon-Sobelco, S.A. Ice preventing apparatus and method for gas and liquid contact means of an atmospheric cooling tower. 4,380,517, Cl. 261-142.000.
Bott, Kaspar, to BASF Aktiengesellschaft. Preparation of caffeine. 4,380,631, Cl. 544-275.000.
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Bouman, Anton J.; and Geertsema, Eise B., to U.S. Philips Corporation. High-pressure discharge lamp. 4,380,714, Cl. 313-549.000.
Bournonville, Jean-Paul; Snappe, Roger; Miquel, Jean; and Martino, Germain, to Institut Francais Du Petrole. Catalyst and process for manufacturing a ketone by dehydrogenation of a secondary alcohol. 4,380,673, Cl. 568-361.000.
Bous, Karl, to Hacoba Textilmaschinen GmbH & Co. KG. Device for space-dyeing textile filaments. 4,380,158, Cl. 68-205.00R.
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Braley, Charles A. Overflow control system. 4,380,243, Cl. 137-312.000.
Brandewie, Joseph E.; and Hart, Granville S., to AMP Incorporated. Electrical harness fabricating apparatus. 4,380,117, Cl. 29-742.000.
Branson International Plasma Corporation: *See*—
Reichelderfer, Richard F.; Vogel, Diane C.; and Tang, Marian C., 4,380,488, Cl. 156-643.000.
Brasseries Kronenbourg: *See*—
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Bream, William A. Kinetic waveform device. 4,380,562, Cl. 428-8.000.
Bredow, Walter; and Otto, Gerhard, to C. Behrens AG. Arrangement for replaceably holding a stripper of a tool holder of the tool, and a replacing tool for replacing the stripper. 4,380,182, Cl. 83-140.000.
Bresie, Don A.; Fowler, Donald W.; and Burns, Jack M., to Texas Gas Transport Company. Method and system for distributing natural gas. 4,380,242, Cl. 137-113.000.
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British Petroleum Company Limited, The: *See*—
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Brothers, Woodrow W. Accessory for using steel wool or other abrading materials. 4,380,092, Cl. 15-209.00C.
Broton, Robert M., to Motorola, Inc. Transmit-receive switching circuit for radio frequency circulators. 4,380,822, Cl. 455-80.000.
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Brunner, Hans-Georg; and Fory, Werner, to Ciba-Geigy Corporation. Novel benzthiazolylurea derivatives, compositions containing them and their use as herbicides. 4,380,640, Cl. 548-163.000.
Bryhn, Odd R.: *See*—
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Bunch, Earnest B., Jr., to B. Bunch Company, Inc. Paper stop adjustment mechanism for continuous form stationery folding machine. 4,380,448, Cl. 493-410.000.
Bunyan, Thomas W., to Pilgrim Engineering Developments Limited. Stud manipulating device. 4,380,181, Cl. 81-57.380.
Burgess, Basil A. Dispersion mixer. 4,380,398, Cl. 366-261.000.
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Butts, Orville R., to Roper Corporation. Multiprocessor control bus. 4,380,698, Cl. 219-492.000.

C. Behrens AG: *See*—
Bredow, Walter; and Otto, Gerhard, 4,380,182, Cl. 83-140.000.

Caillot, Luc, to Synthelabo. Control device for an artificial respirator. 4,380,233, Cl. 128-204.210.

Calder, Alexander W.: *See*—
Bodimer, Theodore B.; David, Joseph S.; and Calder, Alexander W., 4,380,288, Cl. 198-820.000.

Callihan, Clayton D., to Louisiana State University. Novel desiccant. 4,380,458, Cl. 55-33.000.

Campagne, Jean-Claude; Chollet, Jean; and Redien, Pierre, to Rhone Poulenc Industries. Sucroglyceride on a support. 4,380,555, Cl. 426-549.000.

Campbell, John A. L.; Moynihan, Daniel J.; Roper, William D.; and Willis, Earl C., to Peabody Coal Company. Dust control system and method of operation. 4,380,353, Cl. 299-12.000.

Canada, Emily J., to Eli Lilly and Company. Insecticidal oxazolyl ureas. 4,380,641, Cl. 548-233.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See*—
Bell, Malcolm E., 4,380,735, Cl. 324-244.000.

Canadian Patents & Development Limited: *See*—
Hill, Eugene E.; Scrimshaw, Marvin S.; and Showalter, Edward W., 4,380,808, Cl. 367-153.000.

Cancio, Leopoldo V.; and Wu, Pai-Chuan, to Clopay Corporation. Cross-tearable decorative sheet material. 4,380,564, Cl. 428-167.000.

Cane Harvest Inc.: *See*—
Duncan, Richard A., 4,380,281, Cl. 198-304.000.

Canniff, Ronald J., to Bell Telephone Laboratories, Incorporated. Loopback test. 4,380,810, Cl. 370-15.000.

Canon Kabushiki Kaisha: *See*—
Sado, Ichiro; and Ozawa, Toshiaki, 4,380,726, Cl. 320-48.000.
Sato, Yasuhisa; and Tsuji, Sadahiko, 4,380,377, Cl. 350-427.000.
Suda, Shigeyuki; and Tanaka, Kazuo, 4,380,376, Cl. 350-427.000.
Takahashi, Yuji, 4,380,309, Cl. 222-450.000.
Takatori, Yasushi, 4,380,771, Cl. 346-140.00R.
Tamura, Tetsuo, 4,380,378, Cl. 350-429.000.
Tateoka, Masamichi; and Minoura, Kazuo, 4,380,390, Cl. 355-71.000.
Tezuka, Nobuo, 4,380,381, Cl. 354-173.000.

Cantwell, J. Edward: *See*—
MacLean, John P.; Cantwell, J. Edward; Brown, John D.; and Hoy, Harold D., 4,380,105, Cl. 29-157.00R.

Capasso, Gaetano. Polyfunction programmable data receiver. 4,380,762, Cl. 340-825.630.

Capuano, Terry D., to Lamson & Sessions Co., The. Fastener. 4,380,414, Cl. 411-187.000.

Carl Freudenberg, Firma: *See*—
Amsel, Friedrich-Wilhelm, 4,380,442, Cl. 464-93.000.

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Burkner, Wolfgant; and Ebert, Franz-Josef, 4,380,285, Cl. 198-533.000.

Carlson, John C. Pump jack assembly for wells. 4,380,150, Cl. 60-372.000.

Carlson, Richard H.; and Gatcomb, Gerald L., to Du Pont de Nemours, E. I., and Company. Process for embossing polymeric substrates by using a composite structure of an aromatic polyamide fabric coated with a fluorosilicone rubber. 4,380,519, Cl. 264-26.000.

Carlson, Roy C., Jr.; and March, Edward J., to Western Electric Company, Inc. Technique for elevating the temperature of a fluid. 4,380,431, Cl. 432-29.000.

Carrico, Robert J.: *See*—
Boguslaski, Robert C.; Carrico, Robert J.; and Christner, James E., 4,380,580, Cl. 435-7.000.

Carrier Corporation: *See*—
Wright, William E., 4,380,263, Cl. 165-76.000.

Carter, Ned C.; and Cramer, Jerry W., to Sunkist Growers, Inc. Apparatus for printing indicia on objects. 4,380,194, Cl. 101-35.000.

Carter, Roy A.: *See*—
Lee, Fred C.; and Carter, Roy A., 4,380,795, Cl. 363-131.000.

Casale, Thomas M.; Schmitz, Frederick J., Jr.; and Pauperas, Victor, to Dayco Corporation. Butterfly valve and method of making same. 4,380,246, Cl. 137-375.000.

Caterpillar Mitsubishi Ltd.: *See*—
Ito, Takeshi; Ishizuka, Shuzo; Goto, Keiichi; and Saito, Keiki, 4,380,284, Cl. 198-494.000.

Caudill, Stanley D.; and Goode, Frederick R., to FMC Corporation. Hose control system. 4,380,244, Cl. 137-355.160.

Celanese Corporation: *See*—
Kliger, Howard S., 4,380,483, Cl. 156-169.000.

Chacour, Selim A.; and Degnan, John R., to Allis-Chalmers Corporation. Bearing support. 4,380,401, Cl. 384-438.000.

Champion International Corporation: *See*—
Bigelow, Stanley K., 4,380,289, Cl. 206-216.000.
Krankkala, Paul L., 4,380,565, Cl. 428-182.000.

Chandler, Lavern E.: *See*—
Hoffman, Robert P.; and Chandler, Lavern E., 4,380,359, Cl. 339-17.00F.

Chang, Clarence D.; and Lang, William H., to Mobil Oil Corporation. Process for synthesizing aniline. 4,380,669, Cl. 564-402.000.

Chaudhry, Jagdish C.; and Chaudhry, Lorena F., to Wichinsky, Michael. Pinball game apparatus. 4,380,335, Cl. 273-121.00A.

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Chaudhry, Jagdish C.; and Chaudhry, Lorena F., 4,380,335, Cl. 273-121.00A.

Check Mate Systems, Inc.: *See*—
Keifer, Terry A., 4,380,097, Cl. 24-160.000.

Chemische Werke Huls AG: *See*—
Sommer, August; Heitmann, Wilhelm; and Brucker, Rainer, 4,380,509, Cl. 252-453.000.

Chermin, Hubertus M. J.: *See*—
De Bijl, Adrianus M. J.; and Chermin, Hubertus M. J., 4,380,719, Cl. 315-101.000.

Chevron Research Company: *See*—
Loken, Tor; and Bryhn, Odd R., 4,380,408, Cl. 405-263.000.

Chiba, Kazumasa; Kobayashi, Kazuhiko; and Muraki, Toshio, to Toray Industries, Inc. Process for producing aliphatic copolyesteramide, an aliphatic copolyesteramide and tubing molded therefrom. 4,380,622, Cl. 528-288.000.

Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T.: *See*—
Szejtli, Jozsef; Budai, Zsuzsanna; Tetenyi nee Erdosi, Magda; and Pap nee Imrenyi, Gabriella, 4,380,626, Cl. 536-103.000.

Chloride Group Limited: *See*—
Terrell, Christopher, 4,380,792, Cl. 362-250.000.

Chollet, Jean: *See*—
Campagne, Jean-Claude; Chollet, Jean; and Redien, Pierre, 4,380,555, Cl. 426-549.000.

Chong, Berni P., to Rohm and Haas Company. Emulsion copolymer cation exchange resins. 4,380,590, Cl. 521-33.000.

Christenson, Christopher P.: *See*—
Vance, Fred L., Jr.; Guerra, Rafael E.; and Christenson, Christopher P., 4,380,616, Cl. 526-101.000.

Christenson, Roger M.: *See*—
Welsh, David A.; Dowbenko, Rostyslaw; Das, Suryya K.; Kania, Charles M.; and Christenson, Roger M., 4,380,601, Cl. 524-555.000.

Christiani, Peter. Self-chilling dispenser for drinking fluids. 4,380,157, Cl. 62-315.000.

Christner, James E.: *See*—
Boguslaski, Robert C.; Carrico, Robert J.; and Christner, James E., 4,380,580, Cl. 435-7.000.

Chu, Chin-Chiun, to Mobil Oil Corporation. Shape selective reactions with zeolite catalysts modified with iron and/or cobalt. 4,380,685, Cl. 585-466.000.

Chugai Boyeki Co., Ltd.: *See*—
Masuda, Shuji; and Ueno, Keisuke, 4,380,568, Cl. 428-276.000.

Church, Larry L.: *See*—
Sun, Shan C.; and Church, Larry L., 4,380,746, Cl. 332-9.00R.

Ciba-Geigy AG: *See*—
Turner, George F. A. M., 4,380,333, Cl. 271-272.000.

Ciba-Geigy Corporation: *See*—
Brunner, Hans-Georg; and Fory, Werner, 4,380,640, Cl. 548-163.000.
Huebner, Charles F.; and Gschwend, Heinz W., 4,380,653, Cl. 549-366.000.
Rasberger, Michael; and Evans, Samuel, 4,380,515, Cl. 260-936.000.
Rasberger, Michael, 4,380,676, Cl. 568-730.000.
Stingelin, Willy; and Loew, Peter, 4,380,627, Cl. 542-423.000.

Cioca, Gheorghe; and Fertell, Paul A., to Seton Company. Polyisocyanate reaction products. 4,380,474, Cl. 106-155.000.

Claiborne, J. Lyle, to Dixie Yarns, Inc. Extraneous dye or colorant scavenging system in laundry. 4,380,453, Cl. 8-606.000.

Clamp-All Corp.: *See*—
Swartz, Frederick R., 4,380,348, Cl. 285-236.000.

Clarion Co., Ltd.: *See*—
Sato, Tadashi, 4,380,809, Cl. 369-6.000.
Usugi, Kikuo, 4,380,826, Cl. 455-165.000.

Claudin, Paul: *See*—
Demeyer, Pierre; and Claudin, Paul, 4,380,785, Cl. 361-96.000.

Clendening, Steven J., to Rockwell International Corporation. Simplified NRZ data phase detector with expanded measuring interval. 4,380,815, Cl. 375-80.000.

Clopay Corporation: *See*—
Cancio, Leopoldo V.; and Wu, Pai-Chuan, 4,380,564, Cl. 428-167.000.

Coad, Brian C., to GTE Products Corporation. Foils of brittle alloys. 4,380,479, Cl. 148-11.50P.

Coates, Clarence A., Jr.; and Weaver, Max A., to Eastman Kodak Company. Methine dyes from tetrahydroquinoline compounds containing N-thioether substituents. 4,380,633, Cl. 544-316.000.

Coca-Cola Company, The: *See*—
Bachmann, G. Merle; Davis, Charles L.; and Morgan, Annis R., Jr., 4,380,130, Cl. 40-584.000.
Barrash, Marshall J., 4,380,129, Cl. 40-307.000.

Coe Manufacturing Company, The: *See*—
Brookhyser, Byron B.; Lictenwalter, Robert H.; McGee, Arthur L.; and Pierson, Darrell E., 4,380,259, Cl. 144-357.000.

Cohen, Paul B.; Young, William R.; and Edwards, W. Dale, to Harris Corporation. TTL to CMOS Interface circuit. 4,380,710, Cl. 307-475.000.

Coleman, James P.; Hallcher, Richard C.; and McMackins, Dudley E., to Monsanto Company. Lactone process. 4,380,650, Cl. 549-326.000.

Coleman, Ronald K.: *See*—
Dickson, J. Douglas; Sweeney, J. David; and Coleman, Ronald K., 4,380,446, Cl. 493-11.000.

Colucci, Bartholomew A.; and Comte, Pierre, to Institute Straumann. Disposable applicator for mini-laparotomy using a clip method. 4,380,238, Cl. 128-346.000.
Combustion Engineering, Inc.: *See*—
Joy, Ira L.; and Humphreys, Neal B., 4,380,491, Cl. 159-4.00B.
Commissariat a l'Energie Atomique: *See*—
Graftieaux, Jean; and Donguy, Rene, 4,380,527, Cl. 376-245.000.
Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme): *See*—
Desserre, Jacques; Helle, Michel; and Lazzari, Jean-Pierre, 4,380,784, Cl. 360-126.000.
Computer Microfilm International Corporation: *See*—
Smith, David L.; and O'Brien, Gerald E., 4,380,776, Cl. 358-102.000.
Comte, Pierre: *See*—
Colucci, Bartholomew A.; and Comte, Pierre, 4,380,238, Cl. 128-346.000.
Conner, William V., to United States of America, Energy. Ductile transplutonium metal alloys. 4,380,470, Cl. 75-122.700.
Connors, Stephen A., to Data Translation, Inc. Data acquisition apparatus. 4,380,764, Cl. 340-870.370.
Conoco Inc.: *See*—
Fenton, Jeff T.; and Mack, Mark P., 4,380,610, Cl. 525-400.000.
Waters, Kenneth H.; Hopkins, John R.; and Payton, Charles E., 4,380,806, Cl. 367-27.000.
Consolidated Papers, Inc.: *See*—
Arndt, William A.; Damrau, Wayne A.; and Gunderson, Donald J., 4,380,396, Cl. 356-432.000.
Consortium fur Elektrochemische Industrie GmbH: *See*—
Gebauer, Helmut; and Hafner, Walter, 4,380,675, Cl. 568-448.000.
Container Technologies, Inc.: *See*—
Schneiter, John W.; Reiss, Ronald J.; and Enskat, Albert G., 4,380,310, Cl. 222-501.000.
Cook Paint and Varnish Company: *See*—
Wright, Howard J.; and Scherrer, Joseph H., 4,380,611, Cl. 525-418.000.
Coolen, Franciscus M.: *See*—
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Cooney, James J. Apparatus and method for cleaning paint roller covers. 4,380,478, Cl. 134-38.000.
Cooper Industries, Inc.: *See*—
Galloup, Clifford L.; Bula, Roger M.; Klemm, Robert W.; and Westerburg, Ralph E., Jr., 4,380,111, Cl. 29-564.400.
Coran, Aubert Y.; and Patel, Raman, to Monsanto Company. Acrylic copolymer rubber/polyvinylchloride. 4,380,606, Cl. 525-196.000.
Cousse, Henri: *See*—
Mouzin, Gilbert; Cousse, Henri; and Stenger, Antoine, 4,380,667, Cl. 564-195.000.
Craig, Gale M., to General Motors Corporation. Actuator for a concealable headlamp assembly. 4,380,789, Cl. 362-65.000.
Craig, Robert J. G., to Incosym, Inc. Universal joint flexure hinge suspension system, and method for manufacturing this system. 4,380,108, Cl. 29-434.000.
Cramer, Jerry W.: *See*—
Carter, Ned C.; and Cramer, Jerry W., 4,380,194, Cl. 101-35.000.
Cramer, Kathleen J. Parenteral needle receptacle. 4,380,292, Cl. 206-366.000.
Crawford, Daniel A.; and Levijoki, Wayne A., to General Motors Corporation. Vacuum pressure selection and generation device. 4,380,418, Cl. 417-87.000.
Crawford, John S.; and Waimman, Roy, to Hospital For Sick Children, The. Intubation of lacrimal ducts. 4,380,239, Cl. 604-28.000.
Crenshaw, Ronnie R.; and Algieri, Aldo A., to Bristol-Myers Company. Chemical compounds. 4,380,638, Cl. 548-135.000.
Crenshaw, Ronnie R.; and Algieri, Aldo A., to Bristol-Myers Company. Substituted 1,2,5-thiadiazole derivatives. 4,380,639, Cl. 548-135.000.
Crisp, Richard D., to Motorola, Inc. Transistor-transistor logic input buffer circuit with power supply/temperature effects compensation circuit. 4,380,707, Cl. 307-443.000.
Crisp, Terrence S., to Klippan S.A. Safety belt buckle. 4,380,100, Cl. 24-230.0AL.
Crombie, Robert A. Testing apparatus for a dual pressure indicator and control unit for pasteurization equipment. 4,380,166, Cl. 73-4.00R.
Crowley, Leslie B. Sustained ignition secondary combustion unit. 4,380,228, Cl. 126-76.000.
Crutcher Resources Corporation: *See*—
Nelson, Jerome W., 4,380,695, Cl. 219-125.120.
Culbertson, Samuel W.; McCulloch, Charles W.; and Williams, Keith G., to Binks Manufacturing Company. Color change valve structure for rotary head electrostatic spray coating systems. 4,380,321, Cl. 239-700.000.
Cunningham, Vernon R., to Rockwell International Corporation. Linearization circuit. 4,380,711, Cl. 307-491.000.
Curry, Byron V. Variable pressure, constant flow drip emitter system and head. 4,380,318, Cl. 239-533.130.
Curtinot, Jean C.; Delestre, Xavier; and Fouillet, Jean, to Thomson-CSF. Tunable ultra-high frequency filter with variable capacitance tuning devices. 4,380,747, Cl. 333-202.000.
Cutter, James W., to Machlett Laboratories, Incorporated, The. Compact X-ray collimator. 4,380,820, Cl. 378-153.000.
Cutters Exchange, Inc.: *See*—
Smith, Hoyt L.; Frederick, Cecil S., deceased; and Frederick, Wallace, administrator, 4,380,330, Cl. 270-31.000.
Dahle, David P.: *See*—
Davis, Leland E.; Dahle, David P.; Schneiter, Fred E.; and Kirchoff, George F., 4,380,346, Cl. 280-736.000.
Daimler-Benz A.G.: *See*—
Waldschutz, Heinz; Rauner, Franz; and Patzelt, Helmut, 4,380,341, Cl. 277-56.000.
Daintrey, Joseph W.; Rushton, John; and Willis, Michael, to Gestetner Manufacturing Limited. Copying method and apparatus. 4,380,383, Cl. 355-3.00R.
Damrau, Wayne A.: *See*—
Arndt, William A.; Damrau, Wayne A.; and Gunderson, Donald J., 4,380,396, Cl. 356-432.000.
Danby, Hal C., to Anatros Corporation. Metered drop dispensers. 4,380,235, Cl. 604-251.000.
D'Aniello, Michael J., Jr., to General Motors Corporation. Method of making layered catalysts. 4,380,510, Cl. 252-466.0PT.
Darling Store Fixtures: *See*—
Harig, Robert G., 4,380,110, Cl. 29-525.000.
Harig, Robert G., 4,380,298, Cl. 211-189.000.
Dart Industries Inc.: *See*—
Stillinger, Scott H., 4,380,307, Cl. 222-142.900.
Das, Suryya K.: *See*—
Welsh, David A.; Dowbenko, Rostyslaw; Das, Suryya K.; Kania, Charles M.; and Christenson, Roger M., 4,380,601, Cl. 524-555.000.
Data General Corporation: *See*—
Ziegler, Michael L., II; Druke, Michael B.; Van Roekel, John R.; and Baxter, Ward, II, 4,380,812, Cl. 371-38.000.
Data Translation, Inc.: *See*—
Connors, Stephen A., 4,380,764, Cl. 340-870.370.
Dataproducts Corporation: *See*—
Palombo, Gaston; and Fortescue, Stephen M., 4,380,768, Cl. 346-74.500.
Dauby, Jacques F.: *See*—
Hanotier, Jacques D. V.; and Dauby, Jacques F., 4,380,662, Cl. 562-486.000.
David, Joseph S.: *See*—
Bodimer, Theodore B.; David, Joseph S.; and Calder, Alexander W., 4,380,288, Cl. 198-820.000.
Davis, Charles L.: *See*—
Bachmann, G. Merle; Davis, Charles L.; and Morgan, Annis R., Jr., 4,380,130, Cl. 40-584.000.
Davis, Dwight M., to Stone Container Corporation. Snubbing device for blank conveyor apparatus. 4,380,332, Cl. 271-224.000.
Davis, Leland E.; Dahle, David P.; Schneiter, Fred E.; and Kirchoff, George F., to Thiokol Corporation. Method of and apparatus for speeding the response of an air bag inflator at low temperatures. 4,380,346, Cl. 280-736.000.
Dayco Corporation: *See*—
Casale, Thomas M.; Schmitz, Frederick J., Jr.; and Pauperas, Victor, 4,380,246, Cl. 137-375.000.
De Bijl, Adrianus M. J.; and Chermin, Hubertus M. J., to U.S. Philips Corporation. Electronic device for the starting and a.c. voltage operation of a gas and/or vapor discharge lamp. 4,380,719, Cl. 315-101.000.
de Bruijn, Hans, to Aggregates Equipment, Inc. Cable suspended conveyor. 4,380,282, Cl. 198-318.000.
Deere & Company: *See*—
Behlmer, Wilbur D.; and Kass, John J., 4,380,249, Cl. 137-596.200.
Degnan, John R.: *See*—
Chacour, Selim A.; and Degnan, John R., 4,380,401, Cl. 384-438.000.
Dekker, Lambert: *See*—
Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., 4,380,658, Cl. 549-525.000.
Delestre, Xavier: *See*—
Curtinot, Jean C.; Delestre, Xavier; and Fouillet, Jean, 4,380,747, Cl. 333-202.000.
Delfino, Jean-Jacques; and Prevot, Maurice, to Vallourec. Method of making one-piece tubular axle blanks and the produced axle blanks. 4,380,480, Cl. 148-12.400.
DeLuca, John J.: *See*—
Swensrud, Roger L.; Pavlik, Dennis; and DeLuca, John J., 4,380,362, Cl. 339-112.00L.
Demeyer, Pierre; and Claudin, Paul, to Gerin, Merlin. Solid state trip unit for an electrical circuit breaker. 4,380,785, Cl. 361-96.000.
Den Herder, Marvin J.: *See*—
Kammann, Karl P., Jr.; Den Herder, Marvin J.; and Wagner, Terrence L., 4,380,498, Cl. 252-48.600.
Kammann, Karl P., Jr.; and Den Herder, Marvin J., 4,380,499, Cl. 252-48.600.
Dental Keramik Sande GmbH: *See*—
Kipp, Manfred, 4,380,436, Cl. 433-182.000.
Desserre, Jacques; Helle, Michel; and Lazzari, Jean-Pierre, to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme). Magnetic transducer for reading and/or recording of data contained on a magnetic carrier. 4,380,784, Cl. 360-126.000.
Desyllas, Peter L.; Radley, Barry G.; Rawsthorne, Alasdair; Eaton, John R.; and Murray, John E., to International Computers Ltd. Two level store with many-to-one mapping scheme. 4,380,797, Cl. 364-200.000.
Detroit Radiant Products Company: *See*—
Rozzi, Mario, 4,380,428, Cl. 431-88.000.
Dewey, George G., to Illinois Tool Works Inc. Load-distributive washer for use with compressible material. 4,380,413, Cl. 411-161.000.

Diamond Shamrock Corporation: *See*—
Leitert, Frederick C.; and Vinson, Carl G., Jr., 4,380,682, Cl. 570-219.000.
Dick, Heinz; and Lux, Hans, to Ford Motor Company. Attachment device for components mounted in recesses in vehicle bodywork. 4,380,099, Cl. 24-211.00P.
Dickson, J. Douglas; Sweeney, J. David; and Coleman, Ronald K., to Rexham Corporation. Side sealing mechanism for a packaging machine. 4,380,446, Cl. 493-11.000.
Didier Engineerin GmbH: *See*—
Habermehl, Diethard; Rohde, Wolfgang; Kucharzyk, Werner; and Siebert, Werner, 4,380,125, Cl. 34-10.000.
Diffrient, Niels, to Knoll International, Inc. Reclining chair. 4,380,352, Cl. 297-61.000.
Digital Equipment Corporation: *See*—
Leis, Michael D.; and Rose, Robert C., 4,380,723, Cl. 318-314.000.
DiMatteo, Rocco J. Golf ball position marking device. 4,380,337, Cl. 273-162.00D.
Dineen, John J.: *See*—
Folsom, Lawrence R.; Dineen, John J.; Vitale, Nicholas G.; and Balas, Charles B., Jr., 4,380,152, Cl. 60-520.000.
Dion, Exsior. Bank construction. 4,380,201, Cl. 109-17.000.
Dixie Yarns, Inc.: *See*—
Claiborne, J. Lyle, 4,380,453, Cl. 8-606.000.
Dlugolecki, Jacek: *See*—
Frontczak, Stanislaw, 4,380,551, Cl. 426-28.000.
Dmitriev, Nikolai A.: *See*—
Mazurin, Igor M.; Netupsky, Mikhail L.; Shevtsov, Alexandr V.; Gladky, Viktor T.; Dmitriev, Nikolai A.; Lyapin, Andrei G.; Polyakov, Alexandr V.; Myshev, Mikhail A.; and Panov, Vladimir V., 4,380,532, Cl. 423-469.000.
Dobfar S.p.A.: *See*—
Falciani, Marco; and Broggi, Renato, 4,380,630, Cl. 544-30.000.
Doi, Kazuyuki: *See*—
Higashiyama, Naotoshi; and Doi, Kazuyuki, 4,380,823, Cl. 455-143.000.
Dolhyj, Serge R.; and Velenyi, Louis J., to Standard Oil Company, The. Hydroalkylation of benzene and analogs. 4,380,683, Cl. 585-268.000.
Dolza, John. Variable ratio belt drive. 4,380,444, Cl. 474-21.000.
Donan, David C., Jr., to Waiamea Company, Inc. Dual thrust anchor shell assembly. 4,380,407, Cl. 405-259.000.
Donguy, Rene: *See*—
Grafticaux, Jean; and Donguy, Rene, 4,380,527, Cl. 376-245.000.
Doren, Mark N., to Markson Manufacturing Company. Hot dog broiler and method for making same. 4,380,192, Cl. 99-441.000.
Dorn, Franz, to Hoffmann-La Roche Inc. 1,3-Dioxolane compounds and their use as fungicides. 4,380,544, Cl. 424-263.000.
Dotzer, Richard; and Plundrich, Winfried, to Siemens Aktiengesellschaft. Process for the chemical plotting of boundary layer flows, and chemigraphy materials for the practice thereof. 4,380,170, Cl. 73-147.000.
Douglas, Fred O., to W. C. Bradley Co. Safety guard for valve. 4,380,247, Cl. 137-382.000.
Dow Chemical Company, The: *See*—
Dunbar, Joseph E., 4,380,649, Cl. 549-285.000.
Fowler, Allan E.; White, Gordon E.; and Sims, Steve A., 4,380,684, Cl. 585-328.000.
Monroe, Roger F., 4,380,537, Cl. 424-200.000.
Moreno, Carlos M.; Bridges, Robert D.; and Uzee, Andre J., 4,380,521, Cl. 264-49.000.
Murchison, Craig B.; and Murdick, Dewey A., 4,380,589, Cl. 518-714.000.
Renga, James M.; and Wang, Pen-Chung, 4,380,636, Cl. 546-326.000.
Shipley, Randall S.; and Birkelbach, Donald F., 4,380,508, Cl. 252-431.00C.
Smith, Harry A., 4,380,455, Cl. 44-56.000.
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Dunbar, Joseph E., to Dow Chemical Company, The. Isophorone derivatives. 4,380,649, Cl. 549-285.000.
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Gabrielsen, Rolf S.; Graham, Patricia A.; and Klijanowicz, James E., 4,380,666, Cl. 564-82.000.
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Eaton, Jefferson O., to United States of America, Navy. Safety and arming device/contact fuze. 4,380,197, Cl. 102-228.000.
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Eckhardt, Gert, to Licentia Patent-Verwaltungs-G.m.b.H. Traffic broadcasting system. 4,380,821, Cl. 455-33.000.
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Eisman, Norman L., to Arvin Industries, Inc. Staked reinforced strips. 4,380,301, Cl. 220-73.000.
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Peters, Mary K., 4,380,635, Cl. 546-202.000.
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England, Michael J.: *See*—
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Fish, Robert E. Safety barrier. 4,380,327, Cl. 256-24.000.
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Fleming, Robert W., to Warner-Lambert Company. N-(2,6-Dimethylphenyl)-4,5-dihydro-4,4-dialkyl-2-methylthio-1H-imidazole-1-carboxamides, anticonvulsive composition and method. 4,380,548, Cl. 424-273.00R.
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Fretz, Edward R., Jr.; and Green, Joseph, 4,380,571, Cl. 428-415.000.
Fogell, Leonard L.; Levine, Samuel R.; and Weinberger, Arnold, to International Business Machines Corp. Error checking of mutually-exclusive control signals. 4,380,813, Cl. 371-52.000.
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Fortsch, Johann; Lorry, Cosmas; and Schweiger, Gustav, to Dynamit Nobel Aktiengesellschaft. Machine installation for the production of thick-walled insulating pipes of foam synthetic resin sheets. 4,380,486, Cl. 156-359.000.
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Franken, Adrianus J. J.; Coolen, Franciscus M.; Khoe, Giok D.; Langerhorst, Jacob; and Smulders, Henricus W. W., to U.S. Philips Corporation. Detachable connector for optical fibres. 4,380,366, Cl. 350-96.210.
Franko-Filipasic, Borivoj R.; and Hobson, Philip B., to FMC Corporation. Process for preparation of 2,3-dihydro-2,2-dimethyl-7-hydroxybenzofuran. 4,380,654, Cl. 549-462.000.
Frantz, Gene A., to Texas Instruments Incorporated. Liquid crystal display device. 4,380,371, Cl. 350-336.000.
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Frias, Robert, to Ingram Corporation. Pipe storage system. 4,380,297, Cl. 211-60.00S.

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Wojtowicz, John A.; and Gergo, Andree M. B., 4,380,501, Cl. 252-186.240.

Gerin, Merlin: *See*—
Demeyer, Pierre; and Claudin, Paul, 4,380,785, Cl. 361-96.000.

Gessinger, Gernot; and Mercier, Olivier, to BBC Brown, Boveri & Company, Ltd. High-damping composite material. 4,380,574, Cl. 428-686.000.

Gestetner Manufacturing Limited: *See*—
Daintrey, Joseph W.; Rushton, John; and Willis, Michael, 4,380,383, Cl. 355-3.00R.

Gestrelius, Stina M.; and Kjaer, Jorgen H., to Novo Industri A/S. Method of deacidifying wine and composition therefor. 4,380,552, Cl. 426-52.000.

Giannetti, Vittorio. Electroacoustic transducer for hearing aids. 4,380,689, Cl. 179-114.00R.

Girard, Stephen E.: *See*—
Reid, Robert R.; Winkler, Edward; and Girard, Stephen E., 4,380,209, Cl. 118-253.000.

Glacier GmbH-DEVA Werke: *See*—
Lichtinghagen, Klaus, 4,380,473, Cl. 419-41.000.

Gladky, Viktor T.: *See*—
Mazurin, Igor M.; Netupsky, Mikhail L.; Shevtsov, Alexandr V.; Gladky, Viktor T.; Dmitriev, Nikolai A.; Lyapin, Andrei G.; Polyakov, Alexandr V.; Myshev, Mikhail A.; and Panov, Vladimir V., 4,380,532, Cl. 423-469.000.

Glasgow, Lyle E., to United States of America, Energy. Solar receiver protection means and method for loss of coolant flow. 4,380,229, Cl. 126-418.000.

Glinka, John S.; and Zack, Larry E., to Qonaar Corporation. Electronic interlock for a cash collection receptacle. 4,380,316, Cl. 232-16.000.

Glombitza, Klaus: *See*—
Endres, Bernhard; and Glombitza, Klaus, 4,380,403, Cl. 401-213.000.

Godat, Jean; Parmenon, Daniel; Krzywdziak, Alain; and Boudin, Daniel, to Fonderie et Ateliers des Sablons. Mixer for homogenizing a mixture of products contained in a vessel. 4,380,399, Cl. 366-289.000.

Godfrey, Michael F.; and Lynam, David, to Marconi Company, Ltd., The. Radar systems. 4,380,765, Cl. 343-16.00M.

Goldstein, Kenneth; and Sharpe, Claude A., to Texas Instruments Incorporated. Controlled antenna tuner. 4,380,767, Cl. 343-745.000.

Goode, Frederick R.: *See*—
Caudill, Stanley D.; and Goode, Frederick R., 4,380,244, Cl. 137-355.160.

Goodman, Alvin M., to RCA Corporation. Self aligned aluminum polycrystalline silicon contact. 4,380,773, Cl. 357-23.000.

Gorsuch, Thomas J.: *See*—
Adler, Ralph P. I.; Gorsuch, Thomas J.; Murty, Yellapu V.; and Woronicki, Alexander R., 4,380,262, Cl. 164-423.000.

Goserud, Dean L. Portable seat. 4,380,208, Cl. 114-363.000.

Gossler, Gerhard; and Wilde, Eugen, to E.G.O. Elektro-Gerate Blanc u. Fischer. Radiant electrical heater, as well as method and apparatus for the manufacture thereof. 4,380,116, Cl. 29-611.000.

Goto, Keiichi: *See*—
Ito, Takeshi; Ishizuka, Shuzo; Goto, Keiichi; and Saito, Keiki, 4,380,284, Cl. 198-494.000.

Goto, Kohei: *See*—
Ikeda, Hiroharu; Goto, Kohei; and Shimozato, Yasuyuki, 4,380,607, Cl. 525-232.000.

Gotoh, Junichi: *See*—
Hasuo, Masayoshi; Suga, Yoshinori; Kitada, Hisashi; Maruyama, Yasuo; and Gotoh, Junichi, 4,380,608, Cl. 525-247.000.

Gottstein, William J., to Bristol-Myers Company. 2β-Chloromethyl-2α-methylpenam-3α-carboxylic acid sulfone and salts and esters thereof. 4,380,512, Cl. 260-245.20R.

Gotze, Volkmar; and Schutt, Dieter, to International Business Machines Corp. Programmable logic array with self correction of faults. 4,380,811, Cl. 371-10.000.

Gould Inc.: *See*—
Stowe, David W., 4,380,394, Cl. 356-358.000.

GPD Inc.: *See*—
Segar, Richard B.; and Marascalco, Lewis C., 4,380,802, Cl. 364-900.000.

Graftieaux, Jean; and Donguy, Rene, to Commissariat a l'Energie Atomique. Standard fission product emission device for detecting failed fuel elements in a nuclear reactor. 4,380,527, Cl. 376-245.000.

Graham, Ellis R., to University of Missouri, The Curators of the. Method and apparatus for measuring moisture tension in leaves of growing plants. 4,380,169, Cl. 73-73.000.

Graham, Patricia A.: *See*—
Gabriclaen, Rolf S.; Graham, Patricia A.; and Klijanowicz, James E., 4,380,666, Cl. 564-82.000.

Granges Metallverken Aktiebolag: *See*—
Jonason, Karl G., 4,380,106, Cl. 29-157.30A.

Grant, Patrick T.: *See*—
Blair, Albert; and Grant, Patrick T., 4,380,213, Cl. 119-3.000.

Grassmann, Friedhelm: *See*—
Koerner, Gotz; Sanger, Gerd; Fink, Hans-Ferdi; and Grassmann, Friedhelm, 4,380,503, Cl. 252-314.000.

Gray, Herbert W.; and Payne, Roger A., to Gates Rubber Company, The. Wire reinforced hose and method. 4,380,252, Cl. 138-125.000.

Gray, Roger, to Rudd, Thomas H. Voltage regulator system for motorcycles and the like. 4,380,727, Cl. 322-28.000.

Green, Joseph: *See*—
Fretz, Edward R., Jr.; and Green, Joseph, 4,380,571, Cl. 428-415.000.

Greene, Janice L.; and Loza, Roman, to Standard Oil Company. Preparation of polyamide from dinitrile, diamine, water, and CO_2 catalyst. 4,380,623, Cl. 528-335.000.

Greenwood, David L. Self-cleaning adhesive dispensing apparatus. 4,380,308, Cl. 222-148.000.

Greynolds, Fred L.; Whiteside, Robert C.; and Durkee, Doyle D., to Leesona Corporation. Plastics trim press sheet feeding mechanisms. 4,380,183, Cl. 83-244.000.

Griffin, Neil C., to Reliance Electric Company. Compensated load cell. 4,380,175, Cl. 73-862.670.

Gross, Daniel, to Battelle Memorial Institute. Optical fiber, having on at least one of its frontal extremities a plano-convex microlens joined with its plane face to said frontal extremity. 4,380,365, Cl. 350-96.180.

Gschwend, Heinz W.: *See*—
Huebner, Charles F.; and Gschwend, Heinz W., 4,380,653, Cl. 549-366.000.

GTE Automatic Electric Laboratories, Inc.: *See*—
Stewart, James A., 4,380,687, Cl. 179-2.0BC.

GTE Laboratories Incorporated: *See*—
Adler, Ralph P. I.; Gorsuch, Thomas J.; Murty, Yellapu V.; and Woronicki, Alexander R., 4,380,262, Cl. 164-423.000.

GTE Products Corporation: *See*—
Coad, Brian C., 4,380,479, Cl. 148-11.50P.

Guerra, Rafael E.: *See*—
Vance, Fred L., Jr.; Guerra, Rafael E.; and Christenson, Christopher P., 4,380,616, Cl. 526-101.000.

Gunderson, Donald J.: *See*—
Arndt, William A.; Damrau, Wayne A.; and Gunderson, Donald J., 4,380,396, Cl. 356-432.000.

Gupta, Ramesh, to Exxon Research and Engineering Co. Hydroprocessing reactor with extended operating life. 4,380,529, Cl. 422-220.000.

Gurley, James R. Internal combustion engine. 4,380,220, Cl. 123-226.000.

Gut, Edwin; Arnold, Erwin; and Friedli, Hans, to Swiss Aluminium Ltd. Method of using a chisel for a crust breaking facility. 4,380,492, Cl. 204-67.000.

Gutnick, David L.; Rosenberg, Eugene; Belsky, Igal; and Zinaida, Zosim, to Petroleum Fermentations N.V. ψ-Emulsans. 4,380,504, Cl. 252-356.000.

Gventsadze, Tatyana I.: *See*—
Karabegov, Mikhail A.; Ovanesian, Aram G.; Mesropian, Eduard A.; Metreveli, Georgy T.; Karpeev, Anatoly A.; Khoshtaria, Boris K.; and Gventsadze, Tatyana I., 4,380,392, Cl. 356-243.000.

Habermehl, Diethard; Rohde, Wolfgang; Kucharzyk, Werner; and Siebert, Werner, to Bergwerksverband GmbH; and Didier Engineerin GmbH. Method of and apparatus for drying and preheating coking coal in a flight stream tube. 4,380,125, Cl. 34-10.000.

Hacoba Textilmaschinen GmbH & Co. KG: *See*—
Bous, Karl, 4,380,158, Cl. 68-205.00R.

Hafner, Walter: *See*—
Gebauer, Helmut; and Hafner, Walter, 4,380,675, Cl. 568-448.000.

Haggiund, Bengt G.: *See*—
Sundman, Carl-Erik; and Haggiund, Bengt G., 4,380,561, Cl. 427-421.000.

Hague International: *See*—
LaHaye, Paul G.; and Bjerklie, John W., 4,380,429, Cl. 431-115.000.

Hall, Gaddis G. Clevis thimble connector. 4,380,404, Cl. 403-79.000.

Hallcher, Richard C.: *See*—
Coleman, James P.; Hallcher, Richard C.; and McMackins, Dudley E., 4,380,650, Cl. 549-326.000.

Hallford, Ben R., to Rockwell International Corporation. Symmetric microwave mixer with improved isolation. 4,380,831, Cl. 455-327.000.

Hamada, Minoru: *See*—
Matsuzaki, Kazuhiko; Hamada, Minoru; and Sakurai, Hisaya, 4,380,620, Cl. 528-232.000.

Hametner, Albert L.: *See*—
Soderberg, Mark S.; Hametner, Albert L.; Leppink, Herman F.; and Strand, David E., 4,380,295, Cl. 209-558.000.

Hammann, Ingeborg: *See*—
Maurer, Fritz; Schroder, Rolf; Hammann, Ingeborg; and Stendel, Wilhelm, 4,380,538, Cl. 424-200.000.

Hamon-Sobelco, S.A.: *See*—
Boone, Jacques G. P. E., 4,380,517, Cl. 261-142.000.

Hang, Kenneth W.: *See*—
Prabhu, Ashok N.; and Hang, Kenneth W., 4,380,750, Cl. 338-308.000.

Hannon, William B. Nail clipping retainer. 4,380,120, Cl. 30-28.000.

Hanotier, Jacques D. V.; and Dauby, Jacques F., to Labofina, S.A. Process for the purification of terephthalic acid. 4,380,662, Cl. 562-486.000.

Hanser, Paul E., to HWH Corporation. Log splitter. 4,380,258, Cl. 144-193.00A.

Hansson, Erik G. Clasping device. 4,380,102, Cl. 24-248.0SA.

Hanyu, Susumu; and Koide, Akio, to Janome Sewing Machine Co. Ltd. Needle and feed cam arrangement for a zig zag sewing machine. 4,380,204, Cl. 112-158.00A.

Hardigg Industries, Inc.: *See*—
Hardigg, James S., 4,380,577, Cl. 429-175.000.

Hardigg, James S., to Hardigg Industries, Inc. Staggered teeth cover. 4,380,577, Cl. 429-175.000.

Harding, Geoffrey; and Wagner, Wolfgang, to U.S. Philips Corporation. Method for examining a body with penetrating radiation. 4,380,817, Cl. 378-87.000.

Harig, Robert G., to Darling Store Fixtures. Method of farming a mitered joint. 4,380,110, Cl. 29-525.000.

Harig, Robert G., to Darling Store Fixtures. Knock down store display fixture. 4,380,298, Cl. 211-189.000.

Harr, Robert G.; and Soli, Gaylord T., to America's Cup, Inc. Flotation vest. 4,380,441, Cl. 441-112.000.

Harries, David A.: *See*—
Ingram, Brian; Harries, David A.; and England, Michael J., 4,380,277, Cl. 188-329.000.

Harris Corporation: *See*—
Cohen, Paul B.; Young, William R.; and Edwards, W. Dale, 4,380,710, Cl. 307-475.000.
Wagner, Robert S., 4,380,738, Cl. 330-151.000.

Hart, Cornelis M., to U.S. Philips Corporation. I^2L With polysilicon diodes and interconnects. 4,380,708, Cl. 307-457.000.

Hart, Granville S.: *See*—
Brandewie, Joseph E.; and Hart, Granville S., 4,380,117, Cl. 29-742.000.

Hart, Patrick J., to Texas Instruments Incorporated. Frequency/phase locked loop circuit using digitally controlled oscillator. 4,380,742, Cl. 331-1.00A.

Hartle, Ronald J.: *See*—
Hollstein, Thomas E.; and Hartle, Ronald J., 4,380,320, Cl. 239-697.000.

Hashimoto, Shigeyoshi: *See*—
Suzuki, Haruo; and Hashimoto, Shigeyoshi, 4,380,261, Cl. 164-120.000.

Hashizume, Shinji; and Fukumiza, Shinichi, to Kobe Steel, Ltd. Duplex type continuous mixer. 4,380,397, Cl. 366-77.000.

Haslam, Alan A.; Isalski, Wieslaw H.; and Tomlinson, Terence R., to Petrocarbon Developments Ltd. Recovery of hydrogen from ammonia synthesis purge gas. 4,380,461, Cl. 62-11.000.

Hasler, Barbara: *See*—
Beinvogl, Willy; and Hasler, Barbara, 4,380,489, Cl. 156-643.000.

Hasuo, Masayoshi; Suga, Yoshinori; Kitada, Hisashi; Maruyama, Yasuo; and Gotoh, Junichi, to Mitsubishi Chemical Industries, Ltd. Process for producing propylene-ethylene block copolymer. 4,380,608, Cl. 525-247.000.

Haubner, Georg: *See*—
Wesemeyer, Jurgen; Haubner, Georg; and Meier, Werner, 4,380,225, Cl. 123-613.000.

Hauer, Kurt: *See*—
Naimer, Gundolf; and Hauer, Kurt, 4,380,121, Cl. 30-42.000.

Hawes, David: *See*—
Ahern, John; Farmer, Wayne; Hawes, David; and McEvoy, Herbert J., Jr., 4,380,379, Cl. 351-106.000.

Hayami, Masaaki: *See*—
Yamashita, Akio; and Hayami, Masaaki, 4,380,629, Cl. 542-455.000.

Haynes, Robert: *See*—
Thomson, George A.; and Haynes, Robert, 4,380,199, Cl. 105-225.000.

Hazeltine Corporation: *See*—
Romeo, Arthur L.; Bonelli, Robert T.; and Fishman, Harvey E., 4,380,716, Cl. 315-8.000.

Hedges, Charles V.: *See*—
Mark, Victor; Holub, Frederick F.; and Hedges, Charles V., 4,380,612, Cl. 525-439.000.

Hefner, Irving V. Antifreeze cover assembly for external faucets. 4,380,245, Cl. 137-375.000.

Hehl, Karl. Compact hydraulic drive for die closing unit of injection molding machine. 4,380,427, Cl. 425-590.000.
Heitmann, Wilhelm: *See*—
Sommer, August; Heitmann, Wilhelm; and Brucker, Rainer, 4,380,509, Cl. 252-453.000.
Helle, Michel: *See*—
Desserre, Jacques; Helle, Michel; and Lazzari, Jean-Pierre, 4,380,784, Cl. 360-126.000.
Heller, William C., Jr.: *See*—
Repik, Clyde P.; and Leatherman, Alfred F., 4,380,484, Cl. 156-251.000.
Henkel Kommanditgesellschaft auf Aktien: *See*—
Erwied, Werner; and Wegemund, Bernd, 4,380,597, Cl. 524-109.000.
Henri, Nithart: *See*—
Roger, Gillet; and Henri, Nithart, 4,380,713, Cl. 310-214.000.
Henry, William J., to Milliken Research Corporation. Belt false twisting system. 4,380,144, Cl. 57-286.000.
Hercules Incorporated: *See*—
Bankert, Ralph A., 4,380,603, Cl. 524-598.000.
Dumas, David H., 4,380,602, Cl. 524-598.000.
Hermann Hemscheidt Maschinenfabrik GmbH & Co.: *See*—
Bull, Hans; Ewich, Gerhard; Kuschke, Gunther; Maykemper, Alfred; and Welzel, Josef, 4,380,410, Cl. 405-299.000.
Higashiyama, Naotoshi; and Doi, Kazuyuki, to Nippon Electric Co., Ltd. Multi-channel signal processing circuit formed in a semiconductor integrated circuit. 4,380,823, Cl. 455-143.000.
Higgins, David E.: *See*—
Nield, Eric; Higgins, David E.; and Young, Mark W., 4,380,621, Cl. 528-287.000.
Higginson, Roy C.; and Whiteman, Paul L., to Morgan Trailer MFG. Co. Latch mechanism for walk ramps. 4,380,415, Cl. 414-537.000.
Hill, Eugene E.; Scrimshaw, Marvin S.; and Showalter, Edward W., to Canadian Patents & Development Limited. Thinned array transducer for sonar. 4,380,808, Cl. 367-153.000.
Hill, John; and Bannister, Royston W. Bobbins for electrical coils. 4,380,748, Cl. 335-151.000.
Hirata, Atsumi; Tajima, Osamu; Kaneda, Isami; Sugiyama, Hiroyuki; Saito, Takashi; and Mochizuki, Masafumi, to Victor Company of Japan, Ltd. Disc-shaped recording medium reproducing apparatus. 4,380,780, Cl. 360-97.000.
Hirata, Atsumi, to Victor Company of Japan, Ltd. Disc-shaped recording medium reproducing apparatus. 4,380,781, Cl. 360-97.000.
Hirato, Akira: *See*—
Matsufuji, Teruo; Hirato, Akira; and Kawada, Yoshihiro, 4,380,690, Cl. 179-170.0NC.
Hirose, Fumio: *See*—
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,380,536, Cl. 424-180.000.
Hirose, Yasuyuki; Shimaoka, Motohiro; Saito, Shoichiro; and Kowaguchi, Toru, to Alps Electric Co., Ltd. Drive apparatus for flexible magnetic discs. 4,380,782, Cl. 360-99.000.
Hitachi, Ltd.: *See*—
Ibe, Hidefumi, 4,380,168, Cl. 73-40.50R.
Inoue, Takao, 4,380,824, Cl. 455-143.000.
Ishioka, Sachio; Shimomoto, Yssuharu; Imamura, Yoshinori; Ataka, Saburo; Tanaka, Yasuo; Matsubara, Hirokazu; Takasaki, Yukio; and Maruyama, Eiichi, 4,380,557, Cl. 427-38.000.
Kaku, Masaro; Sawaki, Yasumasa; and Ando, Kunio, 4,380,729, Cl. 323-285.000.
Kaneki, Tadashi; and Takeda, Kazuo, 4,380,405, Cl. 403-318.000.
Kuniyoshi, Shinji; Takanashi, Akihiro; and Kurosaki, Toshiei, 4,380,395, Cl. 356-401.000.
Hitzman, Donald O., to Phillips Petroleum Company. Fermentation apparatus. 4,380,584, Cl. 435-313.000.
Ho, Roland: *See*—
Wisnouskas, Joseph S.; and Ho, Roland, 4,380,531, Cl. 423-316.000.
Hobson, Philip B.: *See*—
Franko-Filipasic, Borivoj R.; and Hobson, Philip B., 4,380,654, Cl. 549-462.000.
Hoechst Aktiengesellschaft: *See*—
Roscher, Gunter; Schaum, Helmut; and Schmitz, Heinz, 4,380,663, Cl. 562-536.000.
Hoei Sangyo Kabushiki Kaisha: *See*—
Nishizawa, Masayuki, 4,380,791, Cl. 362-231.000.
Hofer, Peter H., to International Harvester Co. Abrasive liquid jet cutting. 4,380,138, Cl. 51-321.000.
Hoffacker, Franz: *See*—
Engelsmann, Dieter; Hoffacker, Franz; Kovacic, Guido; Lermann, Peter; Luhrig, Hermann; and Wagner, Karl, 4,380,382, Cl. 354-275.000.
Hoffman, Robert P.; and Chandler, Lavern E., to General Motors Corporation. Electrical connector for an instrument panel. 4,380,359, Cl. 339-17.00F.
Hoffman, William F. Trailer tow locking device. 4,380,160, Cl. 70-14.000.
Hoffmann-La Roche Inc.: *See*—
Dorn, Franz, 4,380,544, Cl. 424-263.000.
Suchy, Milos, 4,380,661, Cl. 560-62.000.
Hoglund, Nils. Grinding wheel dressing apparatus. 4,380,227, Cl. 125-11.0PT.
Holcomb, Gayle, to V-T Rhythms, Inc. Talking metronome. 4,380,185, Cl. 84-1.030.
Hollstein, Thomas E.; and Hartle, Ronald J., to Nordson Corporation. Electrostatic powder spray gun nozzle. 4,380,320, Cl. 239-697.000.
Holub, Frederick F.: *See*—
Mark, Victor; Holub, Frederick F.; and Hedges, Charles V., 4,380,612, Cl. 525-439.000.
Honaga, Susumu: *See*—
Kawabata, Minoru; Honaga, Susumu; and Takahashi, Kenji, 4,380,472, Cl. 419-9.000.
Honeywell Inc.: *See*—
Searle, John L., 4,380,400, Cl. 374-37.000.
Hopkins, John R.: *See*—
Waters, Kenneth H.; Hopkins, John R.; and Payton, Charles E., 4,380,806, Cl. 367-27.000.
Hori, Fumihisa; and Miyajima, Mikio, to Alps Electric Co., Ltd. Type setting device for printers. 4,380,195, Cl. 101-93.170.
Horsewell, Henry G., to British-American Tobacco Company Limited. Smoking articles. 4,380,241, Cl. 131-336.000.
Hosoda, Yoshikazu; Ishihara, Shigenobu; and Kobayashi, Shoichi, to Showa Denko K.K. Aqueous dispersion of water-soluble polymer composition. 4,380,600, Cl. 524-458.000.
Hospital For Sick Children, The: *See*—
Crawford, John S.; and Wainman, Roy, 4,380,239, Cl. 604-28.000.
Howe, Robert K.; and Lee, Len F., to Monsanto Company. 5-Aryl-4-isothiazolecarboxylic acids and derivatives. 4,380,465, Cl. 71-90.000.
Howell, Gary W., to Du Pont de Nemours, E. I., and Company. Method and apparatus for processing fluid materials. 4,380,257, Cl. 141-1.000.
Hoy, Harold D.: *See*—
MacLean, John P.; Cantwell, J. Edward; Brown, John D.; and Hoy, Harold D., 4,380,105, Cl. 29-157.00R.
Huebner, Charles F.; and Gschwend, Heinz W., to Ciba-Geigy Corporation. 1,5-Bis-(1,4-benzodioxin-2-yl)-3-azapentane-1,5-diols. 4,380,653, Cl. 549-366.000.
Humphreys, Neal B.: *See*—
Joy, Ira L.; and Humphreys, Neal B., 4,380,491, Cl. 159-4.00B.
HWH Corporation: *See*—
Hanser, Paul E., 4,380,258, Cl. 144-193.00A.
Hydrocarbon Research, Inc.: *See*—
Sirkar, Amalesh K., 4,380,678, Cl. 568-863.000.
Ibe, Hidefumi, to Hitachi, Ltd. Sodium leakage detection system and method of controlling the same. 4,380,168, Cl. 73-40.50R.
Ichikawa, Junju, to Kagawa & Co., Ltd. Greeting card with open work engraving thereon. 4,380,128, Cl. 40-158.00R.
Ikeda, Hiroharu; Goto, Kohei; and Shimozato, Yasuyuki, to Japan Synthetic Rubber Co., Ltd. Rubber composition having high modulus of elasticity and process for preparing same. 4,380,607, Cl. 525-232.000.
Ikeda, Toshimitsu: *See*—
Matsumoto, Shoji; Matsui, Toshikazu; Ikeda, Toshimitsu; Kozuka, Nobuhiko; Nishihama, Hitoshi; and Aizawa, Tatsuo, 4,380,579, Cl. 430-126.000.
Ikuzawa, Masanori: *See*—
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,380,536, Cl. 424-180.000.
Illinois Tool Works Inc.: *See*—
Dewey, George G., 4,380,413, Cl. 411-161.000.
Imam, Imdad; and Bernd, Leslie H., to General Electric Company. On-line rotor crack detection. 4,380,172, Cl. 73-659.000.
Imamura, Yoshinori: *See*—
Ishioka, Sachio; Shimomoto, Yasuharu; Imamura, Yoshinori; Ataka, Saburo; Tanaka, Yasuo; Matsubara, Hirokazu; Takasaki, Yukio; and Maruyama, Eiichi, 4,380,557, Cl. 427-38.000.
IMI Kynoch Limited: *See*—
Wortley, John P. A.; and Woolner, John, 4,380,493, Cl. 204-105.00M.
Imperial Chemical Industries Limited: *See*—
Nield, Eric; Higgins, David E.; and Young, Mark W., 4,380,621, Cl. 528-287.000.
Inami, Mamoru: *See*—
Tanaka, Yoshiaki; and Inami, Mamoru, 4,380,732, Cl. 324-77.00D.
Incosym, Inc.: *See*—
Craig, Robert J. G., 4,380,108, Cl. 29-434.000.
Industrial Manufacturers of Orosi: *See*—
Morris, Billy J., 4,380,294, Cl. 209-540.000.
Ingram, Brian; Harries, David A.; and England, Michael J., to Lucas Industries Limited. Automatic slack adjusters for vehicle shoe-drum brakes. 4,380,277, Cl. 188-329.000.
Ingram Corporation: *See*—
Frias, Robert, 4,380,297, Cl. 211-60.00S.
Innomed Corporation: *See*—
Saferstein, Al; and Spector, Gilbert, 4,380,790, Cl. 362-231.000.
Inoue, Takao, to Hitachi, Ltd. Receiving reproducing system. 4,380,824, Cl. 455-143.000.
Institut Cerac S.A.: *See*—
Morris, David G., 4,380,421, Cl. 425-78.000.
Institut Francais Du Petrole: *See*—
Bournonville, Jean-Paul; Snappe, Roger; Miquel, Jean; and Martino, Germain, 4,380,673, Cl. 568-361.000.
Institute Straunann: *See*—
Colucci, Bartholomew A.; and Comte, Pierre, 4,380,238, Cl. 128-346.000.
International Business Machines Corp.: *See*—
Fogell, Leonard L.; Levine, Samuel R.; and Weinberger, Arnold, 4,380,813, Cl. 371-52.000.
Gotze, Volkmar; and Schutt, Dieter, 4,380,811, Cl. 371-10.000.

International Computers Ltd.: *See—*
Desyllas, Peter L.; Radley, Barry G.; Rawsthorne, Alasdair; Eaton, John R.; and Murray, John E., 4,380,797, Cl. 364-200.000.
International Flavors & Fragrances Inc.: *See—*
Boden, Richard M., 4,380,500, Cl. 252-174.110.
Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., 4,380,658, Cl. 549-525.000.
Boden, Richard M., 4,380,674, Cl. 568-417.000.
International Harvester Co.: *See—*
Hofer, Peter H., 4,380,138, Cl. 51-321.000.
Lasken, Richard D., 4,380,278, Cl. 192-3.580.
International Shoe Machine Corporation: *See—*
Runions, Sinville, 4,380,524, Cl. 264-263.000.
Istichar, Lutz; Schnapper, Christoph; and Weghaupt, Erich, to Siemens Aktiesgesellschaft. Arrangement for cooling a superconducting magnet winding. 4,380,712, Cl. 310-52.000.
Isalski, Wieslaw H.: *See—*
Haslam, Alan A.; Isalski, Wieslaw H.; and Tomlinson, Terence R., 4,380,461, Cl. 62-11.000.
Ishida, Yasuo, to Takeda Chemical Industries, Ltd. Hexahydroisoindole derivatives, and their production and use. 4,380,466, Cl. 71-96.000.
Ishihara Sangyo Kaisha Ltd.: *See—*
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Shigehara, Itaru; and Miyaji, Mikio, 4,380,670, Cl. 564-407.000.
Ishihara, Shigenobu: *See—*
Hosoda, Yoshikazu; Ishihara, Shigenobu; and Kobayashi, Shoichi, 4,380,600, Cl. 524-458.000.
Ishii, Hiromichi; Matsuzawa, Hideo; Kobayashi, Masao; and Yamada, Kantaro, to Mitsubishi Rayon Company, Ltd. Process for producing unsaturated aldehydes, and unsaturated fatty acids. 4,380,664, Cl. 562-546.000.
Ishii, Tadashi, to Kobishi Electric Co., Ltd. Motor actuated bell. 4,380,758, Cl. 340-396.000.
Ishikawa, Shinzo: *See—*
Shono, Hiroaki; Noji, Toshio; and Ishikawa, Shinzo, 4,380,462, Cl. 65-1.000.
Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*
Kuwano, Hiroaki, 4,380,164, Cl. 72-21.000.
Ishioka, Sachio; Shimomoto, Yasuharu; Imamura, Yoshinori; Ataka, Saburo; Tanaka, Yasuo; Matsubara, Hirokazu; Takasaki, Yukio; and Maruyama, Eiichi, to Hitachi, Ltd. Method of production of image pickup device. 4,380,557, Cl. 427-38.000.
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Ito, Takeshi; Ishizuka, Shuzo; Goto, Keiichi; and Saito, Keiki, 4,380,284, Cl. 198-494.000.
Israel Aircraft Industries, Ltd.: *See—*
Sherman, Moshe, 4,380,725, Cl. 320-35.000.
Italiano, Victor J., to NCR Corporation. Low ink indication for ink jet print head. 4,380,772, Cl. 346-140.00R.
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ITW Fastex Italia S.p.A.: *See—*
Bassi, Alberto, 4,380,161, Cl. 70-168.000.
Ivanov, Evgeny A.: *See—*
Shevakin, Jury F.; Shpichinetsky, Efim S.; Fedorenko, Valentina P.; Efremov, Boris N.; Klevchenkova, Maria N.; Andrjuschenko, Ivan A.; Krasnoselsky, Iosif A.; Anikeev, Evgeny F.; Ivanov, Evgeny A.; Khomyachkov, Anatoly P.; Shvarts, Naum A.; Kozhevnikova, Ljudmila V.; Romanova, Roza M.; and Zhivotchenko, Alexandr D., 4,380,528, Cl. 420-505.000.
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Matsufuji, Teruo; Hirato, Akira; and Kawada, Yoshihiro, 4,380,690, Cl. 179-170.0NC.
J. M. Voith GmbH: *See—*
Fork, Werner, 4,380,417, Cl. 416-108.000.
J. S. Staedtler K.G.: *See—*
Endres, Bernhard; and Glombitza, Klaus, 4,380,403, Cl. 401-213.000.
Jagenberg Werke: *See—*
Zodrow, Rudolf, 4,380,487, Cl. 156-568.000.
Jager, Gerhard: *See—*
Kraatz, Udo; Jager, Gerhard; Buchel, Karl H.; and Frobberger, Paul-Ernst, 4,380,545, Cl. 424-269.000.
Jagger, Peter C., to Little People Limited. Cutlery improvements for aiding effective and correct use thereof. 4,380,122, Cl. 30-343.000.
Jakobsen, Kjell M.; and Nilsson, Claes T., to PLM Aktiebolag. Process for the production of a blank for subsequent shaping by blow-molding. 4,380,525, Cl. 264-521.000.
Jakubowski, Karl-Heinz: *See—*
Abraham, Uwe; Jakubowski, Karl-Heinz; and Koster, Wilhelm, 4,380,274, Cl. 180-308.000.
James River Corporation of Virginia: *See—*
VanderLugt, Thomas, Jr., 4,380,447, Cl. 493-102.000.
Janome Sewing Machine Co. Ltd.: *See—*
Hanyu, Susumu; and Koide, Akio, 4,380,204, Cl. 112-158.00A.
Japan Synthetic Rubber Co., Ltd.: *See—*
Ikeda, Hiroharu; Goto, Kohei; and Shimozato, Yasuyuki, 4,380,607, Cl. 525-232.000.
Jefferson, John R.; and Skinner, Robert T. J., to Lucas Industries Limited. Liquid fuel injection pumping apparatus. 4,380,223, Cl. 123-383.000.
Jobsis, Frans F.; Keizer, Johannes H.; and Overaker, Ronald F., to Duke University, Inc. Apparatus for monitoring metabolism in body organs. 4,380,240, Cl. 128-633.000.
Joby, Michael J.: *See—*
Burrage, Robert G.; and Joby, Michael J., 4,380,148, Cl. 60-39.281.
Johnson & Johnson/Mona Industries, Inc.: *See—*
Lindemann, Martin K. O.; Mayhew, Raymond L.; O'Lenick, Anthony J., Jr.; and Verdicchio, Robert J., 4,380,637, Cl. 548-112.000.
Johnson, Michael R., to Pfizer. 9-Hydroxyoctahydrobenzo[c]quinolines and their pharmaceutical compositions and method of use. 4,380,542, Cl. 424-248.550.
Jonason, Karl G., to Granges Metallverken Aktiebolag. Assembly apparatus. 4,380,106, Cl. 29-157.30A.
Jones, Andrew, Jr. Game device. 4,380,339, Cl. 273-384.000.
Jones, Stanley W.: *See—*
Franz, James H., Jr.; and Jones, Stanley W., 4,380,724, Cl. 318-353.000.
Joubert, Antoine; Joubert, Thierry; Bichard, Bernard; and Joubert, Jean, to Joubert S.A. Tie hook, particularly rubber spring hook. 4,380,101, Cl. 24-237.000.
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Joubert, Antoine; Joubert, Thierry; Bichard, Bernard; and Joubert, Jean, 4,380,101, Cl. 24-237.000.
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Joy, Ira L.; and Humphreys, Neal B., to Combustion Engineering, Inc. Spray nozzle assembly for spray dryer. 4,380,491, Cl. 159-4.00B.
Joy Manufacturing Company: *See—*
Bodimer, Theodore B.; David, Joseph S.; and Calder, Alexander W., 4,380,288, Cl. 198-820.000.
Juenemann, Werner: *See—*
Loeffler, Hermann; Juenemann, Werner; and Lamm, Gunther, 4,380,452, Cl. 8-532.000.
Jukic, Vjekoslav: *See—*
Everett, Dennis; and Jukic, Vjekoslav, 4,380,819, Cl. 378-114.000.
Jung, Johann: *See—*
Sauter, Hubert; Ammermann, Eberhard; Rentzea, Costin; Zoch, Bernd; Jung, Johann; and Pommer, Ernst-Heinrich, 4,380,546, Cl. 424-269.000.
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Shimbo, Masafumi, 4,380,481, Cl. 148-187.000.
Taguchi, Masaaki, 4,380,372, Cl. 350-346.000.
Kabushiki Kaisha Fujimi Hoseisho: *See—*
Nagane, Masatoshi, 4,380,205, Cl. 112-304.000.
Kabushiki Kaisha Suwa Seikosha: *See—*
Maruyama, Mitsuaki, 4,380,770, Cl. 346-140.00R.
Kaestner, Raymond W.: *See—*
Minkoff, Michael D.; and Kaestner, Raymond W., 4,380,334, Cl. 273-1.00E.
Kagawa & Co., Ltd.: *See—*
Ichikawa, Junju, 4,380,128, Cl. 40-158.00R.
Kahkipuro, Matti, to Elevator GmbH. Apparatus for interfacing weighing data with a lift control system. 4,380,275, Cl. 187-29.00R.
Kaji, Ryoji: *See—*
Kawatani, Kimio; Tsujimoto, Shigenori; and Kaji, Ryoji, 4,380,475, Cl. 106-238.000.
Kaku, Masaro; Sawaki, Yasumasa; and Ando, Kunio, to Hitachi, Ltd. Switching regulator. 4,380,729, Cl. 323-285.000.
Kalle, Niederlassung der Hoechst AG: *See—*
Moraw, Roland; and Schadlich, Gunther, 4,380,388, Cl. 355-15.000.
Kallen, George H., to Union Carbide Corporation. Image blanking circuit for line follower. 4,380,700, Cl. 250-202.000.
Kamen, Dean, to Baxter Travenol Laboratories, Inc. Infusion needle attachment. 4,380,234, Cl. 604-180.000.
Kamioka, Seiichi; Manabe, Masahiko; and Sakai, Rokuro. Apparatus for separating the filament bundle of fibrous material. 4,380,104, Cl. 28-282.000.
Kammann, Karl P., Jr.; Den Herder, Marvin J.; and Wagner, Terrence L., to Ferro Corporation. Sulfurized, transesterified oil additives and their use in a lubricating oil and a fuel. 4,380,498, Cl. 252-48.600.
Kammann, Karl P., Jr.; and Den Herder, Marvin J., to Ferro Corporation. Sulfurized fatty oil additives and their use in a lubricating oil and a fuel. 4,380,499, Cl. 252-48.600.
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Kimura, Yukichi; and Kanamori, Takeshi, 4,380,506, Cl. 252-398.000.
Kanamori, Terutoshi: *See—*
Mitachi, Seiko; Shibata, Shuichi; Kanamori, Terutoshi; Manabe, Toyotaka; and Yasu, Mitsuho, 4,380,588, Cl. 501-37.000.
Kandler, William C., to Tecumseh Products Company. Economical engine construction. 4,380,216, Cl. 123-90.650.
Kaneaki, Tetsuhiko; Murase, Kazuhiko; and Shigeta, Junnosuke, to Matsushita Electrical Industrial Co., Ltd. Electronic musical instrument. 4,380,184, Cl. 84-1.010.
Kaneda, Isami: *See—*
Hirata, Atsumi; Tajima, Osamu; Kaneda, Isami; Sugiyama, Hiroyuki; Saito, Takashi; and Mochizuki, Masafumi, 4,380,780, Cl. 360-97.000.
Kaneki, Tadashi; and Takeda, Kazuo, to Hitachi, Ltd. Head flange mounting device for turbo-machine. 4,380,405, Cl. 403-318.000.
Kaneko, Dentaro: *See—*
Kohama, Hiroyuki; Tamiya, Masaru; Mizukami, Sunichi; Kaneko, Dentaro; and Kimura, Yoshio, 4,380,328, Cl. 266-177.000.
Kaneko, Shuichiro: *See—*
Ozaki, Yoshihiro; Kaneko, Shuichiro; Kuniyoshi, Masayuki; Kondo, Shoji; and Omata, Yasukuni, 4,380,385, Cl. 355-3.0TR.

Kania, Charles M.: *See—*
Welsh, David A.; Dowbenko, Rostyslaw; Das, Suryya K.; Kania, Charles M.; and Christenson, Roger M., 4,380,601, Cl. 524-555.000.

Kantorowicz, Gerard, to Thomson - CSF. Stabilized oscillator for microwaves with frequency conversion and its solid state construction. 4,380,744, Cl. 331-107.00R.

Kaplan, Leonard A., to RCA Corporation. Current amplifier. 4,380,740, Cl. 330-288.000.

Karabegov, Mikhail A.; Ovanesian, Aram G.; Mesropian, Eduard A.; Metreveli, Georgy T.; Karpeev, Anatoly A.; Khoshtaria, Boris K.; and Gventsadze, Tatyana I. Method and apparatus for calibration of instruments serving to count and to determine the size of particles suspended in dispersion medium. 4,380,392, Cl. 356-243.000.

Karklin, Roman Y.; Rumba, Alma A.; and Azanda, Via K. Method of preparing seeding material for production of citric acid. 4,380,583, Cl. 435-242.000.

Karpeev, Anatoly A.: *See—*
Karabegov, Mikhail A.; Ovanesian, Aram G.; Mesropian, Eduard A.; Metreveli, Georgy T.; Karpeev, Anatoly A.; Khoshtaria, Boris K.; and Gventsadze, Tatyana I., 4,380,392, Cl. 356-243.000.

Karpisek, Ladislav S. Assembly kit for a holder for growth supporting medium. 4,380,136, Cl. 47-83.000.

Karsai, Henrik: *See—*
Ambrus, Valeria; and Karsai, Henrik, 4,380,248, Cl. 137-428.000.

Kass, John J.: *See—*
Behlmer, Wilbur D.; and Kass, John J., 4,380,249, Cl. 137-596.200.

Kato Hatsujo Kaisha., Ltd.: *See—*
Nishida, Haruki; and Shinozaki, Nobuya, 4,380,096, Cl. 24-20.00R.

Kato, Jyoji: *See—*
Yoneda, Naoto; Kato, Jyoji; and Kinashi, Keizo, 4,380,644, Cl. 548-321.000.

Kato, Yoshiaki; Fushida, Akira; Ueda, Yasuo; Tohi, Yasusuke; and Aizawa, Tatsuo, to Mita Industrial Company Limited. Plate for lithography or offset printing. 4,380,196, Cl. 101-453.000.

Kaufman, John W.: *See—*
Driver, Donald E.; and Kaufman, John W., 4,380,118, Cl. 29-747.000.

Kawabata, Minoru; Honaga, Susumu; and Takahashi, Kenji, to Toyoda Koki Kabushiki Kaisha. Method for producing pressure plates used in hydraulic pumps. 4,380,472, Cl. 419-9.000.

Kawada, Yoshihiro: *See—*
Matsufuji, Teruo; Hirato, Akira; and Kawada, Yoshihiro, 4,380,690, Cl. 179-170.0NC.

Kawasaki, Teruo: *See—*
Yano, Hiroshi; Kawasaki, Teruo; Nomura, Hiroyuki; and Takeuchi, Mikio, 4,380,733, Cl. 324-166.000.

Kawata, Hiroitsu: *See—*
Fukui, Muneo; Konno, Yutaka; Kubota, Yukio; Aruga, Masayoshi; and Kawata, Hiroitsu, 4,380,534, Cl. 424-38.000.

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Kaye, Saul, to Ben Venue Laboratories, Inc. Sterilizer with inflatable article holder. 4,380,530, Cl. 422-300.000.

Kazlaukas, Gasparas, to United States of America, Navy. Internal tube welding apparatus. 4,380,697, Cl. 219-136.000.

Kearney, Mark B., to General Motors Corporation. Circuit for generating a temperature stabilized output signal. 4,380,728, Cl. 323-281.000.

Kearney & Trecker Corporation: *See—*
Ostby, Lyle D., 4,380,796, Cl. 364-171.000.

Keifer, Terry A., to Check Mate Systems, Inc. Product monitoring device. 4,380,097, Cl. 24-160.000.

Keizer, Johannes H.: *See—*
Jobsis, Frans F.; Keizer, Johannes H.; and Overaker, Ronald F., 4,380,240, Cl. 128-633.000.

Kelly, Arnold J., to Exxon Research and Engineering Co. Electrostatic atomizing device. 4,380,786, Cl. 361-228.000.

Kelsey-Hayes Co.: *See—*
Miller, Roger L., 4,380,718, Cl. 315-93.000.
Sweet, Roger; and Tribe, Leonard T., 4,380,276, Cl. 188-79.50K.

KenoGard A.B.: *See—*
Sundman, Carl-Erik; and Hagglund, Bengt G., 4,380,561, Cl. 427-421.000.

Kessler, Erich: *See—*
Siggel, Erhard; Wick, Gerhard; Linhart, Heinz; and Kessler, Erich, 4,380,594, Cl. 521-182.000.

Kettenes, Dirk K.: *See—*
van den Bosch, Steven; Kettenes, Dirk K.; Bart de Roos, Kris; Sipma, Gerben; and Stoffelsma, Jan, 4,380,655, Cl. 549-472.000.

Kettering, Timothy J.: *See—*
Minchak, Robert J.; Kettering, Timothy J.; and Kroenke, William J., 4,380,617, Cl. 526-161.000.

Khan, Ausat A.; and Morgan, Richard A., to Du Pont de Nemours, E. I., and Company. Batch polymerization process. 4,380,618, Cl. 526-206.000.

Khan, Riaz A.: *See—*
Mufti, Khizar S.; and Khan, Riaz A., 4,380,476, Cl. 127-46.300.

Khoe, Giok D.: *See—*
Franken, Adrianus J. J.; Coolen, Franciscus M.; Khoe, Giok D.; Langerhorst, Jacob; and Smulders, Henricus W. W., 4,380,366, Cl. 350-96.210.

Khomyachkov, Anatoly P.: *See—*
Shevakin, Jury F.; Shpichinetsky, Efim S.; Fedorenko, Valentina P.; Efremov, Boris N.; Klevchenkova, Maria N.; Andrjuschenko, Ivan A.; Krasnoselsky, Iosif A.; Anikeev, Evgeny F.; Ivanov, Evgeny A.; Khomyachkov, Anatoly P.; Shvarts, Naum A.; Kozhevnikova, Ljudmila V.; Romanova, Roza M.; and Zhivotchenko, Alexandr D., 4,380,528, Cl. 420-505.000.

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Karabegov, Mikhail A.; Ovanesian, Aram G.; Mesropian, Eduard A.; Metreveli, Georgy T.; Karpeev, Anatoly A.; Khoshtaria, Boris K.; and Gventsadze, Tatyana I., 4,380,392, Cl. 356-243.000.

Kidoh, Kunizoh; and Wakamori, Hideki, to Kureha Kagaku Kogyo Kabushiki Kaisha. Suspension polymerization of haloethylene compound. 4,380,614, Cl. 526-62.000.

Kimberly-Clark Corporation: *See—*
Reich, Jack W., 4,380,450, Cl. 604-386.000.

Kimura, Yoshio: *See—*
Kohama, Hiroyuki; Tamiya, Masaru; Mizukami, Sunichi; Kaneko, Dentaro; and Kimura, Yoshio, 4,380,328, Cl. 266-177.000.

Kimura, Yukichi; and Kanamori, Takeshi, to Lion Corporation. Process for producing preservatives. 4,380,506, Cl. 252-398.000.

Kinashi, Keizo: *See—*
Yoneda, Naoto; Kato, Jyoji; and Kinashi, Keizo, 4,380,644, Cl. 548-321.000.

Kinder, Horton C. Heat recycling apparatus. 4,380,126, Cl. 34-86.000.

King, Peter F., to Occidental Chemical Corporation. Process for treatment of black plate containers. 4,380,560, Cl. 427-239.000.

Kingsley, William, to Xerox Corporation. Document transport for raster scanners. 4,380,389, Cl. 355-50.000.

Kipp, Manfred, to Dental Keramik Sande GmbH. Support for a removable dental prosthesis. 4,380,436, Cl. 433-182.000.

Kirchoff, George F.: *See—*
Davis, Leland E.; Dahle, David P.; Schneiter, Fred E.; and Kirchoff, George F., 4,380,346, Cl. 280-736.000.

Kiscaden, Roy W.: *See—*
Yannone, Robert A.; and Kiscaden, Roy W., 4,380,146, Cl. 60-39.141.

Kitada, Hisashi: *See—*
Hasuo, Masayoshi; Suga, Yoshinori; Kitada, Hisashi; Maruyama, Yasuo; and Gotoh, Junichi, 4,380,608, Cl. 525-247.000.

Kitamura, Sadafumi; and Taniguchi, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Method for recording multiplexed signals on metal evaporated tape. 4,380,779, Cl. 358-330.000.

Kjaer, Jorgen H.: *See—*
Gestrelius, Stina M.; and Kjaer, Jorgen H., 4,380,552, Cl. 426-52.000.

Klatt, Alfred: *See—*
Reinecke, Erich; and Klatt, Alfred, 4,380,177, Cl. 74-475.000.

Klaus, Arthur; and Tacke, Horst, to Signode Corporation. Air-powered driving tool, having a pilot piston and cylinder. 4,380,313, Cl. 227-130.000.

Kleinlogel, Horst; and Theohar, Carl, to Sandoz Ltd. Guanfacine in treating opiate addiction. 4,380,550, Cl. 424-324.000.

Klemm, Robert W.: *See—*
Galloup, Clifford L.; Bula, Roger M.; Klemm, Robert W.; and Westerburg, Ralph E., Jr., 4,380,111, Cl. 29-564.400.

Klevchenkova, Maria N.: *See—*
Shevakin, Jury F.; Shpichinetsky, Efim S.; Fedorenko, Valentina P.; Efremov, Boris N.; Klevchenkova, Maria N.; Andrjuschenko, Ivan A.; Krasnoselsky, Iosif A.; Anikeev, Evgeny F.; Ivanov, Evgeny A.; Khomyachkov, Anatoly P.; Shvarts, Naum A.; Kozhevnikova, Ljudmila V.; Romanova, Roza M.; and Zhivotchenko, Alexandr D., 4,380,528, Cl. 420-505.000.

Kliger, Howard S., to Celanese Corporation. Process for forming improved carbon fiber reinforced composite coil spring. 4,380,483, Cl. 156-169.000.

Klijanowicz, James E.: *See—*
Gabrielsen, Rolf S.; Graham, Patricia A.; and Klijanowicz, James E., 4,380,666, Cl. 564-82.000.

Klippan S.A.: *See—*
Crisp, Terrence S., 4,380,100, Cl. 24-230.0AL.

Knoll International, Inc.: *See—*
Diffrient, Niels, 4,380,352, Cl. 297-61.000.

Knopf, Karl Horst: *See—*
Knopf, Klara, 4,380,306, Cl. 222-89.000.

Knopf, Klara, to Knopf, Karl Horst. Small beer container. 4,380,306, Cl. 222-89.000.

Kobayashi, Hiroshi: *See—*
Takebe, Hideharu; and Kobayashi, Hiroshi, 4,380,825, Cl. 455-164.000.

Kobayashi, Kazuhiko: *See—*
Chiba, Kazumasa; Kobayashi, Kazuhiko; and Muraki, Toshio, 4,380,622, Cl. 528-288.000.

Kobayashi, Masao: *See—*
Ishii, Hiromichi; Matsuzawa, Hideo; Kobayashi, Masao; and Yamada, Kantaro, 4,380,664, Cl. 562-546.000.

Kobayashi, Shoichi: *See—*
Hosoda, Yoshikazu; Ishihara, Shigenobu; and Kobayashi, Shoichi, 4,380,600, Cl. 524-458.000.

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Yamaguchi, Akihiro; Kobayashi, Tadashi; Yamaguchi, Keizaburo; and Murakami, Hisamichi, 4,380,671, Cl. 568-48.000.

Kobe Steel, Ltd.: *See—*
Hashizume, Shinji; and Fukumizu, Shinichi, 4,380,397, Cl. 366-77.000.
Kohama, Hiroyuki; Tamiya, Masaru; Mizukami, Sunichi; Kaneko, Dentaro; and Kimura, Yoshio, 4,380,328, Cl. 266-177.000.

Kobishi Electric Co., Ltd.: *See—*
Ishii, Tadashi, 4,380,758, Cl. 340-396.000.

Koch, Karl H.: *See*—
Stadelhofer, Jurgen; Franck, Heinz-Gerhard; Koch, Karl H.; and Marrett, Rolf, 4,380,454, Cl. 44-1.00B.
Koch, Rudolf: *See*—
Endlicher, Frank; and Koch, Rudolf, 4,380,755, Cl. 382-68.000.
Koch, Tad H.; and Swanson, Barry J., to University Patents, Inc. 2-Aminopyrrolin 5-ones and aminocyclopropyl isocyanates therefrom. 4,380,647, Cl. 548-519.000.
Kodama, Teruo: *See*—
Nakamura, Osamu; Ogino, Isao; and Kodama, Teruo, 4,380,575, Cl. 429-13.000.
Koebernick, Wolfgang: *See*—
Stadler, Peter; Koebernick, Wolfgang; Samaan, Samir; and Gau, Wolfgang, 4,380,625, Cl. 536-13.900.
Koenig & Bauer AG: *See*—
Michalik, Horst B., 4,380,449, Cl. 493-424.000.
Koenigs, Stephen L.: *See*—
Wasmer, Anthony E.; and Koenigs, Stephen L., 4,380,217, Cl. 123-146.50A.
Koerner, Gotz; Sanger, Gerd; Fink, Hans-Ferdi; and Grassmann, Friedhelm, to Th. Goldschmidt AG. Process for preparing oil-in-water emulsion. 4,380,503, Cl. 252-314.000.
Kohama, Hiroyuki; Tamiya, Masaru; Mizukami, Sunichi; Kaneko, Dentaro; and Kimura, Yoshio, to Kobe Steel, Ltd. Shaft furnace for reducing ores. 4,380,328, Cl. 266-177.000.
Kohno, Yoshiaki: *See*—
Mandai, Haruhumi; Nishimura, Kunitaro; Kohno, Yoshiaki; and Yamaguchi, Masami, 4,380,559, Cl. 427-80.000.
Koide, Akio: *See*—
Hanyu, Susumu; and Koide, Akio, 4,380,204, Cl. 112-158.00A.
Komatsu, Yasuhiro: *See*—
Tahara, Yoshiyuki; Koyama, Hiroyasu; Komatsu, Yasuhiro; Kubota, Reiko; and Takahashi, Toshihiro, 4,380,668, Cl. 564-391.000.
Kondo, Shinichi: *See*—
Umezawa, Hamao; Okami, Yoshiro; and Kondo, Shinichi, 4,380,581, Cl. 435-80.000.
Kondo, Shoji: *See*—
Ozaki, Yoshihiro; Kaneko, Shuichiro; Kuniyoshi, Masayuki; Kondo, Shoji; and Omata, Yasukuni, 4,380,385, Cl. 355-3.0TR.
Konishiroku Photo Industry Co., Ltd.: *See*—
Yajima, Tatsuo, 4,380,387, Cl. 355-3.00R.
Yasuda, Kazuo; Tamura, Akihiko; and Nakamura, Yoshimitsu, 4,380,386, Cl. 355-3.00R.
Konno, Yutaka: *See*—
Fukui, Muneo; Konno, Yutaka; Kubota, Yukio; Aruga, Masayoshi; and Kawata, Hiroitsu, 4,380,534, Cl. 424-38.000.
Koocher, Martin, to Arthur D. Little, Inc. Film badge for determining carbonyl compounds. 4,380,587, Cl. 436-128.000.
Kornblit, Morris J., to General Electric Company. Smoke detector with delayed alarm after change to stand-by power. 4,380,760, Cl. 340-628.000.
Korski, Victor E., to United States of America, Air Force. Aerial refuel floodlight. 4,380,788, Cl. 362-62.000.
Korstrask Mekaniska, G. Naslund: *See*—
Naslund, Gustav, 4,380,573, Cl. 428-595.000.
Kortmann, Wilfried: *See*—
Steinberger, Helmut; Kortmann, Wilfried; and Tuschen, Jurgen, 4,380,451, Cl. 8-477.000.
Koster, Wilhelm: *See*—
Abraham, Uwe; Jakubowski, Karl-Heinz; and Koster, Wilhelm, 4,380,274, Cl. 180-308.000.
Kovacic, Guido: *See*—
Engelsmann, Dieter; Hoffacker, Franz; Kovacic, Guido; Lermann, Peter; Luhrig, Hermann; and Wagner, Karl, 4,380,382, Cl. 354-275.000.
Kowaguchi, Toru: *See*—
Hirose, Yasuyuki; Shimaoka, Motohiro; Saito, Shoichiro; and Kowaguchi, Toru, 4,380,782, Cl. 360-99.000.
Koyama, Hiroyasu: *See*—
Tahara, Yoshiyuki; Koyama, Hiroyasu; Komatsu, Yasuhiro; Kubota, Reiko; and Takahashi, Toshihiro, 4,380,668, Cl. 564-391.000.
Kozhevnikova, Ljudmila V.: *See*—
Shevakin, Jury F.; Shpichinetsky, Efim S.; Fedorenko, Valentina P.; Efremov, Boris N.; Klevchenkova, Maria N.; Andrjuachenko, Ivan A.; Krasnoselsky, Iosif A.; Anikeev, Evgeny F.; Ivanov, Evgeny A.; Khomyachkov, Anatoly P.; Shvarts, Naum A.; Kozhevnikova, Ljudmila V.; Romanova, Roza M.; and Zhivotchenko, Alexandr D., 4,380,528, Cl. 420-505.000.
Kozuka, Nobuhiko: *See*—
Matsumoto, Shoji; Matsui, Toshikazu; Ikeda, Toshimitsu; Kozuka, Nobuhiko; Nishihama, Hitoshi; and Aizawa, Tatsuo, 4,380,579, Cl. 430-126.000.
Kraatz, Udo; Jager, Gerhard; Buchel, Karl H.; and Frohberger, Paul-Ernst, to Bayer Aktiengesellschaft. Combating fungi with triazolylbenzyloxy-ketones and-carbinols. 4,380,545, Cl. 424-269.000.
Kraftwerk Union Aktiengesellschaft: *See*—
Weghaupt, Erich, 4,380,356, Cl. 384-133.000.
Krankkala, Paul L., to Champion International Corporation. Color preservation of wax-coated paperboard. 4,380,565, Cl. 428-182.000.
Krasnoselsky, Iosif A.: *See*—
Shevakin, Jury F.; Shpichinetsky, Efim S.; Fedorenko, Valentina P.; Efremov, Boris N.; Klevchenkova, Maria N.; Andrjuachenko, Ivan A.; Krasnoselsky, Iosif A.; Anikeev, Evgeny F.; Ivanov, Evgeny A.; Khomyachkov, Anatoly P.; Shvarts, Naum A.; Kozhevnikova, Ljudmila V.; Romanova, Roza M.; and Zhivotchenko, Alexandr D., 4,380,528, Cl. 420-505.000.
Kraus, Thaddaus, to Balzers Aktiengesellschaft. Arrangement for uniformly coating surfaces of revolution by vapor deposition in a high vacuum. 4,380,212, Cl. 118-720.000.
Kreitenberg, Arthur. Neck venous and arterial examination teaching instrument. 4,380,439, Cl. 434-268.000.
Krjuk, Timur P.: *See*—
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Kroenke, William J.: *See*—
Minchak, Robert J.; Kettering, Timothy J.; and Kroenke, William J., 4,380,617, Cl. 526-161.000.
Krupa, Andrew S.: *See*—
Velenyi, Louis J.; and Krupa, Andrew S., 4,380,672, Cl. 568-310.000.
Krzywdziak, Alain: *See*—
Godat, Jean; Parmenon, Daniel; Krzywdziak, Alain; and Boudin, Daniel, 4,380,399, Cl. 366-289.000.
Kubo, Seitoku; Kuramochi, Koujiro; and Kyushima, Tatsuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Engagement device in automatic transmission. 4,380,179, Cl. 74-762.000.
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Fukui, Muneo; Konno, Yutaka; Kubota, Yukio; Aruga, Masayoshi; and Kawata, Hiroitsu, 4,380,534, Cl. 424-38.000.
Kucharzyk, Werner: *See*—
Habermehl, Diethard; Rohde, Wolfgang; Kucharzyk, Werner; and Siebert, Werner, 4,380,125, Cl. 34-10.000.
Kuhlmann, Gerhard; Wolf, Erwin; and Wahl, Gunter, to Robert Bosch GmbH. Switching device. 4,380,693, Cl. 200-330.000.
Kuniyoshi, Masayuki: *See*—
Ozaki, Yoshihiro; Kaneko, Shuichiro; Kuniyoshi, Masayuki; Kondo, Shoji; and Omata, Yasukuni, 4,380,385, Cl. 355-3.0TR.
Kuniyoshi, Shinji; Takanashi, Akihiro; and Kurosaki, Toshiei, to Hitachi, Ltd. Reduction projection aligner system. 4,380,395, Cl. 356-401.000.
Kuramochi, Koujiro: *See*—
Kubo, Seitoku; Kuramochi, Koujiro; and Kyushima, Tatsuo, 4,380,179, Cl. 74-762.000.
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Kidoh, Kunizoh; and Wakamori, Hideki, 4,380,614, Cl. 526-62.000.
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,380,536, Cl. 424-180.000.
Kurek, Paul R., to UOP Inc. Preparation of 2,6-di-tert-butyl-4-alkylphenols. 4,380,677, Cl. 568-788.000.
Kurosaki, Toshiei: *See*—
Kuniyoshi, Shinji; Takanashi, Akihiro; and Kurosaki, Toshiei, 4,380,395, Cl. 356-401.000.
Kuschke, Gunther: *See*—
Bull, Hans; Ewich, Gerhard; Kuschke, Gunther; Maykemper, Alfred; and Welzel, Josef, 4,380,410, Cl. 405-299.000.
Kuwano, Hiroaki, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Winding machine. 4,380,164, Cl. 72-21.000.
Kyushima, Tatsuo: *See*—
Kubo, Seitoku; Kuramochi, Koujiro; and Kyushima, Tatsuo, 4,380,179, Cl. 74-762.000.
L.M.T. Radio Professionelle: *See*—
Marchand, Maurice; and Petijean, Christian, 4,380,830, Cl. 455-327.000.
Labelle, Henri M. R. Folding closure with a sweeper. 4,380,260, Cl. 160-235.000.
Labofina, S.A.: *See*—
Hanotier, Jacques D. V.; and Dauby, Jacques F., 4,380,662, Cl. 562-486.000.
Lacy, Jesse H. Golf game. 4,380,338, Cl. 273-245.000.
LaHaye, Paul G.; and Bjerklie, John W., to Hague International. Recirculating burner. 4,380,429, Cl. 431-115.000.
Lake Eyelet Manufacturing Company, Inc.: *See*—
Andrews, Alfred G.; and Sorensen, Charles L., 4,380,402, Cl. 401-74.000.
Lamm, Gunther: *See*—
Loeffler, Hermann; Juenemann, Werner; and Lamm, Gunther, 4,380,452, Cl. 8-532.000.
Lamson & Sessions Co., The: *See*—
Capuano, Terry D., 4,380,414, Cl. 411-187.000.
Landrigan, Richard B.: *See*—
Blocher, John M., Jr.; Veigel, Neil D.; and Landrigan, Richard B., 4,380,556, Cl. 427-6.000.
Landrus, Edward L., to Minnesota Mining and Manufacturing Company. Stapling tool. 4,380,312, Cl. 227-116.000.
Lang, William H.: *See*—
Chang, Clarence D.; and Lang, William H., 4,380,669, Cl. 564-402.000.
Langerhorst, Jacob: *See*—
Frankes, Adrianus J. J.; Coolen, Franciscus M.; Khoe, Giok D.; Langerhorst, Jacob; and Smulders, Henricus W. W., 4,380,366, Cl. 350-96.210.
Langston, Joseph, Jr.; and Murray, Robert J., to Federal Paper Board Co., Inc. Box type carton with hinged lid and one piece reinforced insert. 4,380,314, Cl. 229-33.000.

LaRue, Albert D.; and Wolf, John J., to Babcock & Wilcox Company, The. Mixer for dual register burner. 4,380,202, Cl. 110-263.000.
Lasken, Richard D., to International Harvester Co. Multiple clutch control system employing clutch status monitor. 4,380,278, Cl. 192-3.580.
Lawrence, Richard: *See*—
Lovell, Walter; and Lawrence, Richard, 4,380,343, Cl. 280-242.0WC.
Lawson, Alfred C., to Sybron Corporation. Surgical lamp characterized by having an improved reflector. 4,380,794, Cl. 362-296.000.
Lazan, Frank, Jr. Fish line hook setting attachment. 4,380,131, Cl. 43-15.000.
Lazzari, Jean-Pierre: *See*—
Desserre, Jacques; Helle, Michel; and Lazzari, Jean-Pierre, 4,380,784, Cl. 360-126.000.
Leatherman, Alfred F.: *See*—
Repik, Clyde P.; and Leatherman, Alfred F., 4,380,484, Cl. 156-251.000.
LeBegue, Maurice K., to National Mine Service Company. Mining machine loading bin mounted on boom structure and method. 4,380,354, Cl. 299-18.000.
Leconte, Gilles: *See*—
Allard, Pierre-Yves; and Leconte, Gilles, 4,380,799, Cl. 364-426.000.
Lee, Fred C.; and Carter, Roy A., to United States of America, Energy. Base drive circuit for a four-terminal power Darlington. 4,380,795, Cl. 363-131.000.
Lee, Len F.: *See*—
Howe, Robert K.; and Lee, Len F., 4,380,465, Cl. 71-90.000.
Lee, Minyoung; Szala, Lawrence E.; and Tuft, Roy E., to General Electric Company. Polycrystalline diamond and cemented carbide substrate and synthesizing process therefor. 4,380,471, Cl. 419-11.000.
Leesona Corporation: *See*—
Bonasch, James H.; and Bouchard, William J., Jr., 4,380,254, Cl. 139-435.000.
Greynolds, Fred L.; Whiteside, Robert C.; and Durkee, Doyle D., 4,380,183, Cl. 83-244.000.
Leis, Michael D.; and Rose, Robert C., to Digital Equipment Corporation. Digital velocity servo. 4,380,723, Cl. 318-314.000.
Leitert, Frederick C.; and Vinson, Carl G., Jr., to Diamond Shamrock Corporation. Balanced chlorination process. 4,380,682, Cl. 570-219.000.
Le Marchant, Pierre: *See*—
Monnier, Michel J.; Monneraye, Marc A.; Foucher, Claude; and Le Marchant, Pierre, 4,380,699, Cl. 235-492.000.
Leppink, Herman F.: *See*—
Soderberg, Mark S.; Hametner, Albert L.; Leppink, Herman F.; and Strand, David E., 4,380,295, Cl. 209-558.000.
Lermann, Peter: *See*—
Engelsmann, Dieter; Hoffacker, Franz; Kovacic, Guido; Lermann, Peter; Luhrig, Hermann; and Wagner, Karl, 4,380,382, Cl. 354-275.000.
Levijoki, Wayne A.: *See*—
Crawford, Daniel A.; and Levijoki, Wayne A., 4,380,418, Cl. 417-87.000.
Levine, Samuel R.: *See*—
Fogell, Leonard L.; Levine, Samuel R.; and Weinberger, Arnold, 4,380,813, Cl. 371-52.000.
Licentia Patent-Verwaltungs-G.m.b.H.: *See*—
Eckhardt, Gert, 4,380,821, Cl. 455-33.000.
Lichtinghagen, Klaus, to Glacier GmbH-DEVA Werke. Apparatus for the continuous extrusion of electrically conductive granulated materials, preferably powder metallurgy materials. 4,380,473, Cl. 419-41.000.
Lictenwalter, Robert H.: *See*—
Brookhyser, Byron B.; Lictenwalter, Robert H.; McGee, Arthur L.; and Pierson, Darrell E., 4,380,259, Cl. 144-357.000.
Liebermann, Howard H.; Frischmann, Peter G.; and Rosenberry, George M., Jr., to United States of America, Energy. Helical metallic ribbon for continuous edge winding applications. 4,380,572, Cl. 428-592.000.
Limtel, Ltd.: *See*—
Vuissoz, Constant, deceased; Mosoni-Vuissoz, Cesarine, heir; and Voide-Vuissoz, Suzanne, heir, 4,380,430, Cl. 431-347.000.
Lind, David J.; and Richards, Joyce, to Rolls-Royce Limited. Method of manufacturing a composite material. 4,380,523, Cl. 264-257.000.
Lindemann, Martin K. O.; Mayhew, Raymond L.; O'Lenick, Anthony J., Jr.; and Verdicchio, Robert J., to Johnson & Johnson/Mona Industries, Inc. Imidazoline phosphobetaines. 4,380,637, Cl. 548-112.000.
Lindstrum, Alan L.: *See*—
Barlow, Michael L.; and Lindstrum, Alan L., 4,380,745, Cl. 331-176.000.
Linhart, Heinz: *See*—
Siggel, Erhard; Wick, Gerhard; Linhart, Heinz; and Kessler, Erich, 4,380,594, Cl. 521-182.000.
Lion Corporation: *See*—
Kimura, Yukichi; and Kanamori, Takeshi, 4,380,506, Cl. 252-398.000.
Little People Limited: *See*—
Jagger, Peter C., 4,380,122, Cl. 30-343.000.
Little, Roger G., to Spire Corporation. Front surface metallization and encapsulation of solar cells. 4,380,112, Cl. 29-572.000.
Litton Systems, Inc.: *See*—
Wilson, Albert, 4,380,494, Cl. 209-319.000.
Lively, Olin A. Control circuitry for water level control of pools. 4,380,091, Cl. 4-508.000.
Lockwood, George C.; and Trudel, Murray L., to NCR Corporation. Earom cell matrix and logic arrays with common memory gate. 4,380,804, Cl. 365-184.000.
Loctite Corporation: *See*—
Nativi, Larry A., 4,380,613, Cl. 525-440.000.
Loeffler, Hermann; Juenemann, Werner; and Lamm, Gunther, to BASF Aktiengesellschaft. Dyeing and printing of cellulose-containing textile material. 4,380,452, Cl. 8-532.000.
Loew, Peter: *See*—
Stingelin, Willy; and Loew, Peter, 4,380,627, Cl. 542-423.000.
Loken, Tor; and Bryhn, Odd R., to Chevron Research Company. Stabilizing clay soil with dry hydroxy-aluminum. 4,380,408, Cl. 405-263.000.
Longini, Richard L., to Energy Controls, Inc. Apparatus and method for detecting a fraction of a gas. 4,380,167, Cl. 73-24.000.
Lorry, Cosmas: *See*—
Fortsch, Johann; Lorry, Cosmas; and Schweiger, Gustav, 4,380,486, Cl. 156-359.000.
Louisiana State University: *See*—
Callihan, Clayton D., 4,380,458, Cl. 55-33.000.
Lovell, Walter; and Lawrence, Richard. Folding scissor frame wheel chair. 4,380,343, Cl. 280-242.0WC.
Loza, Roman: *See*—
Greene, Janice L.; and Loza, Roman, 4,380,623, Cl. 528-335.000.
Lucas Industries Limited: *See*—
Burrage, Robert G.; and Joby, Michael J., 4,380,148, Cl. 60-39.281.
Ingram, Brian; Harries, David A.; and England, Michael J., 4,380,277, Cl. 188-329.000.
Jefferson, John R.; and Skinner, Robert T. J., 4,380,223, Cl. 123-383.000.
Munro, Malcolm W., 4,380,218, Cl. 123-179.00H.
Lucius, John E.: *See*—
Asick, John C.; Berry, Donald A.; and Lucius, John E., 4,380,361, Cl. 339-91.00R.
Ludecke, Otto A., to General Motors Corporation. Method and means for diesel exhaust particulate emission control. 4,380,149, Cl. 60-274.000.
Ludwig, David, to Allan Air Products, Inc. Tool device. 4,380,270, Cl. 173-163.000.
Luebke, Randall A. Shipping and storage container. 4,380,290, Cl. 206-315.00R.
Luhrig, Hermann: *See*—
Engelsmann, Dieter; Hoffacker, Franz; Kovacic, Guido; Lermann, Peter; Luhrig, Hermann; and Wagner, Karl, 4,380,382, Cl. 354-275.000.
Lux, Hans: *See*—
Dick, Heinz; and Lux, Hans, 4,380,099, Cl. 24-211.00P.
Lyapin, Andrei G.: *See*—
Mazurin, Igor M.; Netupsky, Mikhail L.; Shevtsov, Alexandr V.; Gladky, Viktor T.; Dmitriev, Nikolai A.; Lyapin, Andrei G.; Polyakov, Alexandr V.; Myshev, Mikhail A.; and Panov, Vladimir V., 4,380,532, Cl. 423-469.000.
Lynam, David: *See*—
Godfrey, Michael F.; and Lynam, David, 4,380,765, Cl. 343-16.00M.
Lyons, William C.; and Scurlock, Scot L., to Drilling Development, Inc. Survey tool string. 4,380,264, Cl. 166-169.000.
M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft: *See*—
Fischer, Hermann, 4,380,331, Cl. 271-11.000.
Machlett Laboratories, Incorporated, The: *See*—
Cutter, James W., 4,380,820, Cl. 378-153.000.
Mack, Mark P.: *See*—
Fenton, Jeff T.; and Mack, Mark P., 4,380,610, Cl. 525-400.000.
MacLean, John P.; Cantwell, J. Edward; Brown, John D.; and Hoy, Harold D., to Texaco Inc. Method for shaping, forming and assembling a highly efficient cyclone separator. 4,380,105, Cl. 29-157.00R.
Maffet, Vere, to UOP Inc. Mechanical dewatering process utilizing a nonuniform screw conveyor. 4,380,496, Cl. 210-780.000.
Magers, Thomas A.; and Tabb, David L., to Miles Laboratories, Inc. Stabilization of benzidine-type indicators with various enhancers. 4,380,585, Cl. 436-66.000.
Maher, Donald R. Method of treating spray paint collection water in paint spray booths and composition therefor. 4,380,495, Cl. 210-728.000.
Malwah, Manohar L., to Signetics Corporation. Process for fabricating a high capacity memory cell. 4,380,113, Cl. 29-577.00C.
Manabe, Masahiko: *See*—
Kamioka, Seiichi; Manabe, Masahiko; and Sakai, Rokuro, 4,380,104, Cl. 28-282.000.
Manabe, Toyotaka: *See*—
Mitachi, Seiko; Shibata, Shuichi; Kanamori, Terutoshi; Manabe, Toyotaka; and Yasu, Mitsuho, 4,380,588, Cl. 501-37.000.
Mandai, Haruhumi; Nishimura, Kunitaro; Kohno, Yoshiaki; and Yamaguchi, Masami, to Murata Manufacturing Co., Ltd. Method for producing boundary layer semiconductor ceramic capacitors. 4,380,559, Cl. 427-80.000.
Manitowoc Company, Inc., The: *See*—
Andress, Dennis I., 4,380,107, Cl. 29-252.000.
Mannuzza, Frank J.; and Montalto, Joseph G., to Miles Laboratories, Inc. Purification of bovine thrombin. 4,380,511, Cl. 260-112.00B.
Marascalco, Lewis C.: *See*—
Segar, Richard B.; and Marascalco, Lewis C., 4,380,802, Cl. 364-900.000.

Marcatili, Enrique A. J., to Bell Telephone Laboratories, Incorporated. Velocity mismatched gate. 4,380,364, Cl. 350-96.140.
March, Edward J.: *See*—
Carlson, Roy C., Jr.; and March, Edward J., 4,380,431, Cl. 432-29.000.
Marchand, Maurice; and Petijean, Christian, to L.M.T. Radio Professionelle. Microwave up-converter. 4,380,830, Cl. 455-327.000.
Marconi Company, Ltd., The: *See*—
Godfrey, Michael F.; and Lynam, David, 4,380,765, Cl. 343-16.00M.
Mark, Victor; Holub, Frederick F.; and Hedges, Charles V., to General Electric. High heat distortion resistant segment ester polycarbonates. 4,380,612, Cl. 525-439.000.
Markson Manufacturing Company: *See*—
Doren, Mark N., 4,380,192, Cl. 99-441.000.
Marrett, Rolf: *See*—
Stadelhofer, Jurgen; Franck, Heinz-Gerhard; Koch, Karl H.; and Marrett, Rolf, 4,380,454, Cl. 44-1.00B.
Martin, Keith R., to Uniflo Resources, Inc. Petroleum and gas well enhancement agent. 4,380,268, Cl. 166-304.000.
Martin, Paul H.: *See*—
Mountz, Elton E.; and Martin, Paul H., 4,380,300, Cl. 220-1.500.
Martino, Germain: *See*—
Bournonville, Jean-Paul; Snappe, Roger; Miquel, Jean; and Martino, Germain, 4,380,673, Cl. 568-361.000.
Maruyama, Eiichi: *See*—
Ishioka, Sachio; Shimomoto, Yasuharu; Imamura, Yoshinori; Ataka, Saburo; Tanaka, Yasuo; Matsubara, Hirokazu; Takasaki, Yukio; and Maruyama, Eiichi, 4,380,557, Cl. 427-38.000.
Maruyama, Mitsuaki, to Epson Corporation; and Kabushiki Kaisha Suwa Seikosha. Ink jet printer. 4,380,770, Cl. 346-140.00R.
Maruyama, Yasuo: *See*—
Hasuo, Masayoshi; Suga, Yoshinori; Kitada, Hisashi; Maruyama, Yasuo; and Gotoh, Junichi, 4,380,608, Cl. 525-247.000.
Marvin Glass & Associates: *See*—
Wildman, John R.; and Morrison, Howard J., 4,380,135, Cl. 46-219.000.
Marzorati, Ermanno A.; and Mathis, Murrel A. Belt tightening tool. 4,380,326, Cl. 254-131.000.
Masai, Hiroto, to Aisin Seiki Kabushiki Kaisha. Viscous fluid coupling device. 4,380,279, Cl. 192-58.00B.
Masaki, Ichiro, to Unimation, Inc. Method and apparatus for manipulator welding apparatus with visios correction for workpiece sensing. 4,380,696, Cl. 219-124.340.
Masclet, Jean; and Turiot, Andre, to Messier-Hispano-Bugatti. Main undercarriage train for an aircraft. 4,380,323, Cl. 244-102.00R.
Massachusetts General Hospital: *See*—
Newbower, Ronald S., 4,380,237, Cl. 128-693.000.
Masuda, Shuji; and Ueno, Keisuke, to Chugai Boyeki Co., Ltd. Flame retardant heat insulating composition and method for preparing the same. 4,380,568, Cl. 428-276.000.
Materne, Carsten, to Bayer Aktiengesellschaft. Dihydropyridine compounds which are substituted in the 4-position by imidazolyl or thiazolyl and their medicinal use. 4,380,547, Cl. 424-270.000.
Matesa, Joseph M., to PPG Industries, Inc. Method of melting glass making ingredients. 4,380,463, Cl. 65-99.200.
Mathew, Chempolil T.; and Ulmer, Harry E., to Allied Corporation. Producing alkoxysilanes and alkoxy-oximinosilanes. 4,380,660, Cl. 556-422.000.
Mathis, Murrel A.: *See*—
Marzorati, Ermanno A.; and Mathis, Murrel A., 4,380,326, Cl. 254-131.000.
Matsubara, Hirokazu: *See*—
Ishioka, Sachio; Shimomoto, Yasuharu; Imamura, Yoshinori; Ataka, Saburo; Tanaka, Yasuo; Matsubara, Hirokazu; Takasaki, Yukio; and Maruyama, Eiichi, 4,380,557, Cl. 427-38.000.
Matsufuji, Teruo; Hirato, Akira; and Kawada, Yoshihiro, to Iwasaki Tsushinki Kabushiki Kaisha. Hybrid circuit. 4,380,690, Cl. 179-170.0NC.
Matsui, Toshikazu: *See*—
Matsumoto, Shoji; Matsui, Toshikazu; Ikeda, Toshimitsu; Kozuka, Nobuhiko; Nishihama, Hitoshi; and Aizawa, Tatsuo, 4,380,579, Cl. 430-126.000.
Matsumoto, Shoji; Matsui, Toshikazu; Ikeda, Toshimitsu; Kozuka, Nobuhiko; Nishihama, Hitoshi; and Aizawa, Tatsuo. Electrostatic copying process and apparatus. 4,380,579, Cl. 430-126.000.
Matsunaga, Kenichi: *See*—
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,380,536, Cl. 424-180.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
Kitamura, Sadafumi; and Taniguchi, Hiroshi, 4,380,779, Cl. 358-330.000.
Shinohara, Koichi, 4,380,211, Cl. 118-718.000.
Yamashita, Akio; and Hayami, Masaaki, 4,380,629, Cl. 542-455.000.
Matsushita Electrical Industrial Co., Ltd.: *See*—
Kaneaki, Tetsuhiko; Murase, Kazuhiko; and Shigeta, Junnosuke, 4,380,184, Cl. 84-1.010.
Matsuzaka, Hiroshi, to Yamaha Hatsudoki Kabushiki Kaisha. Carburetor. 4,380,516, Cl. 261-23.00A.
Matsuzaki, Kazuhiko; Hamada, Minoru; and Sakurai, Hisaya, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for preparing polyoxymethylenes. 4,380,620, Cl. 528-232.000.
Matsuzawa, Hideo: *See*—
Ishii, Hiromichi; Matsuzawa, Hideo; Kobayashi, Masao; and Yamada, Kantaro, 4,380,664, Cl. 562-546.000.
Mattel, Inc.: *See*—
Minkoff, Michael D.; and Kaestner, Raymond W., 4,380,334, Cl. 273-1.00E.
Matzner, Markus: *See*—
Robeson, Lloyd M.; and Matzner, Markus, 4,380,598, Cl. 524-163.000.
Maurer, Fritz; Schroder, Rolf; Hammann, Ingeborg; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. Combating arthropods with O-alkyl-O-(2-cyclopropyl-6-substituted-methyl-pyrimidin-4-yl)-(thiono)(thiol) phosphoric (phosphonic) acid esters and ester-amides. 4,380,538, Cl. 424-200.000.
Maurer, Michel: *See*—
Bauer, Gilbert; and Maurer, Michel, 4,380,176, Cl. 73-863.860.
Mayhew, Raymond L.: *See*—
Lindemann, Martin K. O.; Mayhew, Raymond L.; O'Lenick, Anthony J., Jr.; and Verdicchio, Robert J., 4,380,637, Cl. 548-112.000.
Maykemper, Alfred: *See*—
Bull, Hans; Ewich, Gerhard; Kuschke, Gunther; Maykemper, Alfred; and Welzel, Josef, 4,380,410, Cl. 405-299.000.
Mazgy, James D., to RCA Corporation. Photocarrent compensation for electronic circuitry exposed to ionizing radiation. 4,380,741, Cl. 330-308.000.
Mazurin, Igor M.; Netupsky, Mikhail L.; Shevtsov, Alexandr V.; Gladky, Viktor T.; Dmitriev, Nikolai A.; Lyapin, Andrei G.; Polyakov, Alexandr V.; Myshev, Mikhail A.; and Panov, Vladimir V. Process for fine purification of sulphur hexafluoride from impurities. 4,380,532, Cl. 423-469.000.
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Culbertson, Samuel W.; McCulloch, Charles W.; and Williams, Keith G., 4,380,321, Cl. 239-700.000.
McEvoy, Herbert J., Jr.: *See*—
Ahern, John; Farmer, Wayne; Hawes, David; and McEvoy, Herbert J., Jr., 4,380,379, Cl. 351-106.000.
McGee, Arthur L.: *See*—
Brookhyser, Byron B.; Licteswalter, Robert H.; McGee, Arthur L.; and Pierson, Darrell E., 4,380,259, Cl. 144-357.000.
McGrath, John E.; and Wilson, Earl. Balloon clip. 4,380,103, Cl. 24-255.0SL.
McMackins, Dudley E.: *See*—
Coleman, James P.; Hallcher, Richard C.; and McMackins, Dudley E., 4,380,650, Cl. 549-326.000.
Mead, Howard B.; and Williams, Graham L., to Shell Research Limited. Heat-insulated hose for liquefied gases. 4,380,253, Cl. 138-149.000.
Mechanical Technology Incorporated: *See*—
Folsom, Lawrence R.; Dineen, John J.; Vitale, Nicholas G.; and Balas, Charles B., Jr., 4,380,152, Cl. 60-520.000.
Meier, Werner: *See*—
Wesemeyer, Jurgen; Haubner, Georg; and Meier, Werner, 4,380,225, Cl. 123-613.000.
Menager, Jean, to Societe Internationale de Mecanique Industrielle S.A. Centrifugal pumps. 4,380,416, Cl. 415-170.00A.
Mendelson, Walton L. Liquid fuel-fired water heating tank. 4,380,215, Cl. 122-13.00R.
Mercier, Olivier: *See*—
Gessinger, Gernot; and Mercier, Olivier, 4,380,574, Cl. 428-686.000.
Merck & Co., Inc.: *See*—
Witzel, Bruce E.; Finke, Paul E.; and Allison, Debra L., 4,380,645, Cl. 548-430.000.
Merz, Johann, to Zahnradfabrik Friedrichshafen AG. Oil reservoir particularly for hydraulic steering system. 4,380,272, Cl. 180-132.000.
Mesropian, Eduard A.: *See*—
Karabegov, Mikhail A.; Ovanesian, Aram G.; Mesropian, Eduard A.; Metreveli, Georgy T.; Karpeev, Anatoly A.; Khoshtaria, Boris K.; and Gventsadze, Tatyana I., 4,380,392, Cl. 356-243.000.
Messier-Hispano-Bugatti: *See*—
Masclet, Jean; and Turiot, Andre, 4,380,323, Cl. 244-102.00R.
Metreveli, Georgy T.: *See*—
Karabegov, Mikhail A.; Ovanesian, Aram G.; Mesropian, Eduard A.; Metreveli, Georgy T.; Karpeev, Anatoly A.; Khoshtaria, Boris K.; and Gventsadze, Tatyana I., 4,380,392, Cl. 356-243.000.
Meyers, Bernard L.: *See*—
Udovich, Carl A.; and Meyers, Bernard L., 4,380,648, Cl. 549-259.000.
Michalik, Horst B., to Koenig & Bauer AG. Variable size folder cylinder. 4,380,449, Cl. 493-424.000.
Michalik, John. Leather splitting machine. 4,380,159, Cl. 69-12.000.
Mikhail, Ezzat A., to Minnesota Mining and Manufacturing Company. N,N-Diacylaminoperfluoroalkanesulfonanilides and derivatives thereof. 4,380,464, Cl. 71-88.000.
Miles Laboratories, Inc.: *See*—
Boguslaski, Robert C.; Carrico, Robert J.; and Christner, James E., 4,380,580, Cl. 435-7.000.
Magers, Thomas A.; and Tabb, David L., 4,380,585, Cl. 436-66.000.
Mannuzza, Frank J.; and Montalto, Joseph G., 4,380,511, Cl. 260-112.00B.
Schmidt, Thomas R., 4,380,553, Cl. 426-250.000.
Miller, Roger L., to Kelsey-Hayes Co. Trailer marker light substitution circuit. 4,380,718, Cl. 315-93.000.
Miller, Thomas C. Buoyancy generator device and methods of making and using the same. 4,380,151, Cl. 60-496.000.
Milliken Research Corporation: *See*—
Henry, William J., 4,380,144, Cl. 57-286.000.

Walker, Jesse P.; and Robertson, William H., 4,380,095, Cl. 19-80.00R.
Minchak, Robert J.; Kettering, Timothy J.; and Kroenke, William J., to B. F. Goodrich Company, The. Preparation of polymers from cycloolefins. 4,380,617, Cl. 526-161.000.
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Nakamura, Osamu; Ogino, Isao; and Kodama, Teruo, 4,380,575, Cl. 429-13.000.
Minkoff, Michael D.; and Kaestner, Raymond W., to Mattel, Inc. Electronic card game simulator. 4,380,334, Cl. 273-1.00E.
Minnesota Mining and Manufacturing Company: *See*—
Landrus, Edward L., 4,380,312, Cl. 227-116.000.
Mikhail, Ezzat A., 4,380,464, Cl. 71-88.000.
Vanderwerf, Dennis F., 4,380,374, Cl. 350-423.000.
Minolta Camera Kabushiki Kaisha: *See*—
Ozaki, Yoshihiro; Kaneko, Shuichiro; Kuniyoshi, Masayuki; Kondo, Shoji; and Omata, Yasukuni, 4,380,385, Cl. 355-3.0TR.
Minoura, Kazuo: *See*—
Tateoka, Masamichi; and Minoura, Kazuo, 4,380,390, Cl. 355-71.000.
Miquel, Jean: *See*—
Bournonville, Jean-Paul; Snappe, Roger; Miquel, Jean; and Martino, Germain, 4,380,673, Cl. 568-361.000.
Miranda, Lawrence T.: *See*—
Bullock, John W.; and Miranda, Lawrence T., 4,380,721, Cl. 315-362.000.
Mirrycle Corporation: *See*—
Schacht, Barry M., 4,380,369, Cl. 350-307.000.
Mita Industrial Company Limited: *See*—
Kato, Yoshiaki; Fushida, Akira; Ueda, Yasuo; Tohi, Yasusuke; and Aizawa, Tatsuo, 4,380,196, Cl. 101-453.000.
Mitachi, Seiko; Shibata, Shuichi; Kanamori, Terutoshi; Manabe, Toyotaka; and Yasu, Mitsuho, to Nippon Telegraph & Telephone Public Corporation. Glass for infrared ray-transmitting optical fibers and optical fibers formed from said glass. 4,380,588, Cl. 501-37.000.
Mitchell, Ronald. Anchoring apparatus. 4,380,139, Cl. 52-162.000.
Mitel Corporation: *See*—
Worsman, Adrian D., 4,380,756, Cl. 340-347.0AD.
Mitsubishi Chemical Industries, Ltd.: *See*—
Hasuo, Masayoshi; Suga, Yoshinori; Kitada, Hisashi; Maruyama, Yasuo; and Gotoh, Junichi, 4,380,608, Cl. 525-247.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Takebe, Hideharu; and Kobayashi, Hiroshi, 4,380,825, Cl. 455-164.000.
Mitsubishi Rayon Company, Ltd.: *See*—
Ishii, Hiromichi; Matsuzawa, Hideo; Kobayashi, Masao; and Yamada, Kantaro, 4,380,664, Cl. 562-546.000.
Mitsui Petrochemical Industries, Ltd.: *See*—
Shigemoto, Hiromi, 4,380,567, Cl. 428-213.000.
Mitsui Toatsu Chemicals, Incorporated: *See*—
Yamaguchi, Akihiro; Kobayashi, Tadashi; Yamaguchi, Keizaburo; and Murakami, Hisamichi, 4,380,671, Cl. 568-48.000.
Mittelhauser, Bernhard. Outside rear view mirror for motor vehicles. 4,380,370, Cl. 350-307.000.
Miyahara, Junji: *See*—
Takahashi, Kenji; and Miyahara, Junji, 4,380,702, Cl. 250-327.200.
Miyaji, Mikio: *See*—
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Shigehara, Itaru; and Miyaji, Mikio, 4,380,670, Cl. 564-407.000.
Miyajima, Mikio: *See*—
Hori, Fumihisa; and Miyajima, Mikio, 4,380,195, Cl. 101-93.170.
Miyao, Fumio; and Tsukioka, Kazumi, to Fuji Xerox Co., Ltd. Keyed AGC circuit for video data transmitting device. 4,380,777, Cl. 358-178.000.
Mizukami, Sunichi: *See*—
Kohama, Hiroyuki; Tamiya, Masaru; Mizukami, Sunichi; Kaneko, Dentaro; and Kimura, Yoshio, 4,380,328, Cl. 266-177.000.
Mobil Oil Corporation: *See*—
Chang, Clarence D.; and Lang, William H., 4,380,669, Cl. 564-402.000.
Chu, Chin-Chiun, 4,380,685, Cl. 585-466.000.
Mochizuki, Masafumi: *See*—
Hirata, Atsumi; Tajima, Osamu; Kaneda, Isami; Sugiyama, Hiroyuki; Saito, Takashi; and Mochizuki, Masafumi, 4,380,780, Cl. 360-97.000.
Mogami, Satoshi, to Nippon Kogaku K. K. Wide angle zoom lens of two-group construction. 4,380,375, Cl. 350-426.000.
Mohaupt, Henry H. Method of treating a hydrocarbon producing well. 4,380,265, Cl. 166-250.000.
Moisson, Marc F. L., to N.V. Raychem S.A. Cable sleeve liner. 4,380,686, Cl. 174-84.00R.
Monneraye, Marc A.: *See*—
Monnier, Michel J.; Monneraye, Marc A.; Foucher, Claude; and Le Marchant, Pierre, 4,380,699, Cl. 235-492.000.
Monnier, Michel J.; Monneraye, Marc A.; Foucher, Claude; and Le Marchant, Pierre, to U.S. Philips Corporation. Portable, identifying element constructed as a lamination of sheets. 4,380,699, Cl. 235-492.000.
Monroe, Roger F., to Dow Chemical Company, The. Stabilized insecticide formulations. 4,380,537, Cl. 424-200.000.
Monsanto Company: *See*—
Agrawal, Purushottam D., 4,380,526, Cl. 264-537.000.
Coleman, James P.; Hallcher, Richard C.; and McMackins, Dudley E., 4,380,650, Cl. 549-326.000.
Coran, Aubert Y.; and Patel, Raman, 4,380,606, Cl. 525-196.000.
Howe, Robert K.; and Lee, Len F., 4,380,465, Cl. 71-90.000.
Morita, Eiichi, 4,380,609, Cl. 525-348.000.
Otstot, Roger S.; and Runkle, Charles J., 4,380,460, Cl. 55-158.000.
Montalto, Joseph G.: *See*—
Mannuzza, Frank J.; and Montalto, Joseph G., 4,380,511, Cl. 260-112.00B.
Montedison S.p.A.: *See*—
Noristi, Luciano; and Baruzzi, Giovanni, 4,380,507, Cl. 252-429.00B.
Moon, Frederick H., to Zenith Radio Corporation. Oscillator for television tuner. 4,380,827, Cl. 455-179.000.
Moon, Frederick H., to Zenith Radio Corporation. UHF MOSFET Mixer. 4,380,828, Cl. 455-319.000.
Moraw, Roland; and Schadlich, Gunther, to Kalle, Niederlassung der Hoechst AG. Cyclic electrophotographic copying process. 4,380,388, Cl. 355-15.000.
Moreno, Carlos M.; Bridges, Robert D.; and Uzee, Andre J., to Dow Chemical Company, The. Method to produce a polytetra-fluoroethylene diaphragm. 4,380,521, Cl. 264-49.000.
Morgan, Annis R., Jr.: *See*—
Bachmann, G. Merle; Davis, Charles L.; and Morgan, Annis R., Jr., 4,380,130, Cl. 40-584.000.
Morgan, Clyde R. Bicycle handlebar grip. 4,380,093, Cl. 16-110.00R.
Morgan, Richard A.: *See*—
Khan, Ausat A.; and Morgan, Richard A., 4,380,618, Cl. 526-206.000.
Morgan Trailer MFG. Co.: *See*—
Higginson, Roy C.; and Whiteman, Paul L., 4,380,415, Cl. 414-537.000.
Mountz, Elton E.; and Martin, Paul H., 4,380,300, Cl. 220-1.500.
Morimoto, Akira: *See*—
Ochiai, Michihiko; and Morimoto, Akira, 4,380,541, Cl. 424-246.000.
Morimoto, Jiro: *See*—
Nagata, Hiroshi; Sano, Kazuo; Morimoto, Jiro; and Shiho, Makoto, 4,380,393, Cl. 356-328.000.
Morin, Robert A. Wire link-forming and linking device. 4,380,145, Cl. 59-27.000.
Morita, Eiichi, to Monsanto Company. Prevulcanization inhibitors of thio-triazine-amines for rubber. 4,380,609, Cl. 525-348.000.
Morris, Billy J., to Industrial Manufacturers of Orosi. Apparatus for assorting articles according to size. 4,380,294, Cl. 209-540.000.
Morris, David G., to Institut Cerac S.A. Die for compaction of powder. 4,380,421, Cl. 425-78.000.
Morrison, Howard J.: *See*—
Wildman, John R.; and Morrison, Howard J., 4,380,135, Cl. 46-219.000.
Morton, Henry H., Jr. Electrical power regulating apparatus and method. 4,380,730, Cl. 323-300.000.
Morton, Paul H. Energy collection and storage system. 4,380,419, Cl. 417-334.000.
Mosoni-Vuissoz, Cesarine, heir: *See*—
Vuissoz, Constant, deceased; Mosoni-Vuissoz, Cesarine, heir; and Voide-Vuissoz, Suzanne, heir, 4,380,430, Cl. 431-347.000.
Mostek Corporation: *See*—
Proebsting, Robert J., 4,380,805, Cl. 365-201.000.
Motomura, Noriyuki; and Tsuboi, Hiroyuki, to Toshiba Kikai Kabushiki Kaisha. Apparatus for measuring injection speed in injection molding machines. 4,380,801, Cl. 364-565.000.
Motorola, Inc.: *See*—
Au, Kenneth K., 4,380,709, Cl. 307-473.000.
Broton, Robert M., 4,380,822, Cl. 455-80.000.
Crisp, Richard D., 4,380,707, Cl. 307-443.000.
Pfaff, William, 4,380,736, Cl. 328-73.000.
Shannon, Paul D.; and Bruce, William C., Jr., 4,380,798, Cl. 364-200.000.
Wrathall, Robert S., 4,380,706, Cl. 307-297.000.
Mountz, Elton E.; and Martin, Paul H., to Morgan Trailer Mfg. Co. Air cargo container. 4,380,300, Cl. 220-1.500.
Mouzin, Gilbert; Cousse, Henri; and Stenger, Antoine, to Pierre Fabre S.A. 2'-(Orthochlorobenzoyl)-4'-chloroglycylanilides, compositions thereof, and use as medicaments. 4,380,667, Cl. 564-195.000.
Moynihan, Daniel J.: *See*—
Campbell, John A. L.; Moynihan, Daniel J.; Roper, William D.; and Willis, Earl C., 4,380,353, Cl. 299-12.000.
Mudhar, Manohar: *See*—
Singh, Manohar A.; and Mudhar, Manohar, 4,380,778, Cl. 358-194.100.
Mufti, Khizar S.; and Khan, Riaz A., to Talres Development (N.A.) N.V. Process for the preparation of 4,1',6'-trichloro-4,1',6'-trideoxygalactosucrose (TGS). 4,380,476, Cl. 127-46.300.
Mukai, Hideo: *See*—
Ueno, Tsuyoshi; and Mukai, Hideo, 4,380,384, Cl. 355-3.0CH.
Mukhin, Viktor M.: *See*—
Abduganiev, Abdurakhim; Tikhonov, Valentin N.; Shlykov, Gennady N.; Zhestkov, Vitaly I.; Krjuk, Timur P.; Mukhin, Viktor M.; and Tikhonov, Jury N., 4,380,143, Cl. 57-89.000.
Muller, Hanns P.; Sommerfeld, Claus-Dieter; and Becker, Gernot, to Bayer Aktiengesellschaft. Process for the production of polyether polyols. 4,380,502, Cl. 252-182.000.
Munro, Malcolm W., to Lucas Industries Limited. Starting aid for internal combustion engines. 4,380,218, Cl. 123-179.00H.
Murakami, Hisamichi: *See*—
Yamaguchi, Akihiro; Kobayashi, Tadashi; Yamaguchi, Keizaburo; and Murakami, Hisamichi, 4,380,671, Cl. 568-48.000.

Muraki, Toshio: *See*—
Chiba, Kazumasa; Kobayashi, Kazuhiko; and Muraki, Toshio, 4,380,622, Cl. 528-288.000.
Murase, Kazuhiko: *See*—
Kaneaki, Tetsuhiko; Murase, Kazuhiko; and Shigeta, Junnosuke, 4,380,184, Cl. 84-1.010.
Murata Manufacturing Co., Ltd.: *See*—
Mandai, Haruhumi; Nishimura, Kunitaro; Kohno, Yoshiaki; and Yamaguchi, Masami, 4,380,559, Cl. 427-80.000.
Murchison, Craig B.; and Murdick, Dewey A., to Dow Chemical Company, The. Novel Fischer-Tropsch catalysts. 4,380,589, Cl. 518-714.000.
Murdick, Dewey A.: *See*—
Murchison, Craig B.; and Murdick, Dewey A., 4,380,589, Cl. 518-714.000.
Murray, Geneva A.: *See*—
Murray, James F.; and Murray, Geneva A., 4,380,296, Cl. 209-704.000.
Murray, James F.; and Murray, Geneva A. Yarn holder and method of separating yarn by color. 4,380,296, Cl. 209-704.000.
Murray, John E.: *See*—
Desyllas, Peter L.; Radley, Barry G.; Rawsthorne, Alasdair; Eaton, John R.; and Murray, John E., 4,380,797, Cl. 364-200.000.
Murray, Robert J.: *See*—
Langston, Joseph, Jr.; and Murray, Robert J., 4,380,314, Cl. 229-33.000.
Murty, Yellapu V.: *See*—
Adler, Ralph P. I.; Gorsuch, Thomas J.; Murty, Yellapu V.; and Woronicki, Alexander R., 4,380,262, Cl. 164-423.000.
Myshev, Mikhail A.: *See*—
Mazurin, Igor M.; Netupsky, Mikhail L.; Shevtsov, Alexandr V.; Gladky, Viktor T.; Dmitriev, Nikolai A.; Lyapin, Andrei G.; Polyakov, Alexandr V.; Myshev, Mikhail A.; and Panov, Vladimir V., 4,380,532, Cl. 423-469.000.
Nagane, Masatoshi, to Kabushiki Kaisha Fujimi Hoseisho. Guidance apparatus for a sewing machine. 4,380,205, Cl. 112-304.000.
Nagata, Hiroshi; Sano, Kazuo; Morimoto, Jiro; and Shibo, Makoto, to Nippon Kogaku K.K. Grazing incidence spectrometer. 4,380,393, Cl. 356-328.000.
Nagata, Koichi; and Umetsu, Shinjiro, to Nippon Electric Co., Ltd. Portable radio communication device having signal processing circuit with presetting function. 4,380,832, Cl. 455-343.000.
Naimer, Gundolf; and Hauer, Kurt, to Payer-Lux Elektroproduktie Gesellschaft m.b.H. Electric shaver. 4,380,121, Cl. 30-42.000.
Nakamura, Osamu; Ogino, Isao; and Kodama, Teruo, to Agency of Industrial Science and Technology; and Ministry of International Trade and Industry. Method for conversion of chemical energy to electric energy. 4,380,575, Cl. 429-13.000.
Nakamura, Yoshimitsu: *See*—
Yasuda, Kazuo; Tamura, Akihiko; and Nakamura, Yoshimitsu, 4,380,386, Cl. 355-3.00R.
Naslund, Gustav, to Korstrask Mekaniska, G. Naslund. Method and device for bending section-sheet, plate, strip and like material. 4,380,573, Cl. 428-595.000.
National Mine Service Company: *See*—
LeBegue, Maurice K., 4,380,354, Cl. 299-18.000.
National Research Development Corporation: *See*—
Blair, Albert; and Grant, Patrick T., 4,380,213, Cl. 119-3.000.
Saunders, David H., 4,380,477, Cl. 134-7.000.
Nativi, Larry A., to Loctite Corporation. Gasketing and sealing composition. 4,380,613, Cl. 525-440.000.
NCR Corporation: *See*—
Italiano, Victor J., 4,380,772, Cl. 346-140.00R.
Lockwood, George C.; and Trudel, Murray L., 4,380,804, Cl. 365-184.000.
NECCHI S.p.A.: *See*—
Bianchi, Nereo, 4,380,203, Cl. 112-158.00E.
Nelson, Jerome W., to Crutcher Resources Corporation. Method for controlling torch position and travel in automatic welding. 4,380,695, Cl. 219-125.120.
Netting, David I., to Atlantic Richfield Company. Method for reducing the amount of coal dust in the environment surrounding coal mining. 4,380,459, Cl. 55-87.000.
Netupsky, Mikhail L.: *See*—
Mazurin, Igor M.; Netupsky, Mikhail L.; Shevtsov, Alexandr V.; Gladky, Viktor T.; Dmitriev, Nikolai A.; Lyapin, Andrei G.; Polyakov, Alexandr V.; Myshev, Mikhail A.; and Panov, Vladimir V., 4,380,532, Cl. 423-469.000.
Neuhaus, Karl-Friedrich; Perrey, Hermann; Fuhr, Karl; Freier, Hans-Joachim; and Bendszus, Otto, to Bayer Aktiengesellschaft. Radiation-hardenable acrylic acid esters containing urethane groups and their use. 4,380,604, Cl. 524-873.000.
Newbower, Ronald S., to Massachusetts General Hospital. Apparatus for making cardiac output conductivity measurements. 4,380,237, Cl. 128-693.000.
Nicholls, Robin P., to Raytheon Company. Apparatus for recycling complete cycles of a stored periodic signal. 4,380,816, Cl. 375-94.000.
Nichols, Richard K., to Barber-Colman Company. Heat-retarding air distribution unit. 4,380,188, Cl. 98-40.00D.
Nield, Eric; Higgins, David E.; and Young, Mark W., to Imperial Chemical Industries Limited. Fast crystallizing polyester compositions. 4,380,621, Cl. 528-287.000.
Niles Parts Co., Ltd.: *See*—
Simizu, Akio, 4,380,754, Cl. 340-73.000.
Nilsson, Claes T.: *See*—
Jakobsen, Kjell M.; and Nilsson, Claes T., 4,380,525, Cl. 264-521.000.
Nippon Electric Co., Ltd.: *See*—
Higashiyama, Naotoshi; and Doi, Kazuyuki, 4,380,823, Cl. 455-143.000.
Nagata, Koichi; and Umetsu, Shinjiro, 4,380,832, Cl. 455-343.000.
Shinnyo, Saburo, 4,380,814, Cl. 375-40.000.
Yanagisawa, Masahiro, 4,380,558, Cl. 427-53.100.
Nippon Kogaku K. K.: *See*—
Mogami, Satoshi, 4,380,375, Cl. 350-426.000.
Nippon Kogaku K.K.: *See*—
Nagata, Hiroshi; Sano, Kazuo; Morimoto, Jiro; and Shibo, Makoto, 4,380,393, Cl. 356-328.000.
Nippon Telegraph & Telephone Public Corporation: *See*—
Mitachi, Seiko; Shibata, Shuichi; Kanamori, Terutoshi; Manabe, Toyotaka; and Yasu, Mitsuho, 4,380,588, Cl. 501-37.000.
Nippondenso Co., Ltd.: *See*—
Suzuki, Haruo; and Hashimoto, Shigeyoshi, 4,380,261, Cl. 164-120.000.
Nishida, Haruki; and Shinozaki, Nobuya, to Nissan Motor Co., Ltd.; and Kato Hatsujo Kaisha., Ltd. Hose clamp. 4,380,096, Cl. 24-20.00R.
Nishihama, Hitoshi: *See*—
Matsumoto, Shoji; Matsui, Toshikazu; Ikeda, Toshimitsu; Kozuka, Nobuhiko; Nishihama, Hitoshi; and Aizawa, Tatsuo, 4,380,579, Cl. 430-126.000.
Nishimura, Kunitaro: *See*—
Mandai, Haruhumi; Nishimura, Kunitaro; Kohno, Yoshiaki; and Yamaguchi, Masami, 4,380,559, Cl. 427-80.000.
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Itao; Shigehara, Itaru; and Miyaji, Mikio, to Ishihara Sangyo Kaisha Ltd. Process for producing 1,3,5-triaminobenzene. 4,380,670, Cl. 564-407.000.
Nishizawa, Masayuki, to Hoei Sangyo Kabushiki Kaisha. Electrically controlled additive lamp housing for optical printing. 4,380,791, Cl. 362-231.000.
Nissan Motor Co., Ltd.: *See*—
Nishida, Haruki; and Shinozaki, Nobuya, 4,380,096, Cl. 24-20.00R.
Yano, Hiroshi; Kawasaki, Teruo; Nomura, Hiroyuki; and Takeuchi, Mikio, 4,380,733, Cl. 324-166.000.
Nisshin Flour Milling Co., Ltd.: *See*—
Tahara, Yoshiyuki; Koyama, Hiroyasu; Komatsu, Yasuhiro; Kubota, Reiko; and Takahashi, Toshihiro, 4,380,668, Cl. 564-391.000.
Nitto Boseki Co., Ltd.: *See*—
Shono, Hiroaki; Noji, Toshio; and Ishikawa, Shinzo, 4,380,462, Cl. 65-1.000.
Noji, Toshio: *See*—
Shono, Hiroaki; Noji, Toshio; and Ishikawa, Shinzo, 4,380,462, Cl. 65-1.000.
Nolt, Edwin B., to Sperry Corporation. Anchoring apparatus. 4,380,207, Cl. 114-298.000.
Nomiyama, Neal T.: *See*—
Buser, Rudolph G.; Rohde, Robert S.; and Nomiyama, Neal T., 4,380,391, Cl. 356-5.000.
Nomura, Hiroyuki: *See*—
Yano, Hiroshi; Kawasaki, Teruo; Nomura, Hiroyuki; and Takeuchi, Mikio, 4,380,733, Cl. 324-166.000.
Nordson Corporation: *See*—
Hollstein, Thomas E.; and Hartle, Ronald J., 4,380,320, Cl. 239-697.000.
Noristi, Luciano; and Baruzzi, Giovanni, to Montedison S.p.A. Catalysts for polymerizing ethylene. 4,380,507, Cl. 252-429.00B.
Normann, Richard W.; and Fairbairn, LeRoy W., to Bendix Corporation, The. Method of making an electrical connector assembly. 4,380,119, Cl. 29-884.000.
Norton, William W., to Baxter Travenol Laboratories, Inc. Fluid pump. 4,380,236, Cl. 604-151.000.
Novits, Michael F.: *See*—
Gallagher, Ronald B.; and Novits, Michael F., 4,380,605, Cl. 525-14.000.
Novo Industri A/S: *See*—
Gestrelius, Stina M.; and Kjaer, Jorgen H., 4,380,552, Cl. 426-52.000.
Nunno, Louis E. M. Footing jig for positioning fasteners. 4,380,329, Cl. 269-41.000.
N.V. Raychem S.A.: *See*—
Moisson, Marc F. L., 4,380,686, Cl. 174-84.00R.
O'Brien, Gerald E.: *See*—
Smith, David L.; and O'Brien, Gerald E., 4,380,776, Cl. 358-102.000.
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King, Peter F., 4,380,560, Cl. 427-239.000.
Winnouskas, Joseph S.; and Ho, Roland, 4,380,531, Cl. 423-316.000.
Ochiai, Michihiko; and Morimoto, Akira, to Takeda Chemical Industries, Ltd. Cephalosporin derivatives. 4,380,541, Cl. 424-246.000.
Ogino, Isao: *See*—
Nakamura, Osamu; Ogino, Isao; and Kodama, Teruo, 4,380,575, Cl. 429-13.000.
Ohhara, Minoru: *See*—
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,380,536, Cl. 424-180.000.
Ohmata, Ken; Aoki, Hideya; and Tamura, Naoyuki. Projection screen. 4,380,368, Cl. 350-117.000.

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Umezawa, Hamao; Okami, Yoshiro; and Kondo, Shinichi, 4,380,581, Cl. 435-80.000.

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O'Lenick, Anthony J., Jr.: *See*—
Lindemann, Martin K. O.; Mayhew, Raymond L.; O'Lenick, Anthony J., Jr.; and Verdicchio, Robert J., 4,380,637, Cl. 548-112.000.

Olin Corporation: *See*—
Wojtowicz, John A.; and Gergo, Andree M. B., 4,380,501, Cl. 252-186.240.
Wojtowicz, John A., 4,380,533, Cl. 423-473.000.

Oltendorf, Norman E., to Bodine Electric Company. Accommodation circuit for a step motor. 4,380,722, Cl 318-696.000.

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Sato, Masanobu, 4,380,691, Cl. 200-51.00R.

Omata, Yasukuni: *See*—
Ozaki, Yoshihiro; Kaneko, Shuichiro; Kuniyoshi, Masayuki; Kondo, Shoji; and Omata, Yasukuni, 4,380,385, Cl. 355-3.0TR.

O'Neill, Raymond J. Crib block for erecting bin walls. 4,380,409, Cl. 405-273.000.

Orlando, Michael D.; and Riley, Jean M., to United States of America, Army. Preparation of dry variola virus. 4,380,582, Cl. 435-239.000.

Orlowski, Jan A.; and Butler, David V., to Scientific Pharmaceuticals; and Sankin Industries, Ltd. Method for adhering structures to teeth. 4,380,432, Cl. 433-9.000.

Ostby, Lyle D., to Kearney & Trecker Corporation. Portable control box for computer numerically controlled machine tools. 4,380,796, Cl. 364-171.000.

Otstot, Roger S.; and Runkle, Charles J., to Monsanto Company. Gas separation apparatus. 4,380,460, Cl. 55-158.000.

Otto, Gerhard: *See*—
Bredow, Walter; and Otto, Gerhard, 4,380,182, Cl. 83-140.000.

Ovanesian, Aram G.: *See*—
Karabegov, Mikhail A.; Ovanesian, Aram G.; Mesropian, Eduard A.; Metreveli, Georgy T.; Karpeev, Anatoly A.; Khoshtaria, Boris K.; and Gventsadze, Tatyana I., 4,380,392, Cl. 356-243.000.

Overaker, Ronald F.: *See*—
Jobsis, Frans F.; Keizer, Johannes H.; and Overaker, Ronald F., 4,380,240, Cl. 128-633.000.

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Ozawa, Toshiaki: *See*—
Sado, Ichiro; and Ozawa, Toshiaki, 4,380,726, Cl. 320-48.000.

P.F.W. Beheer B.V.: *See*—
van den Bosch, Steven; Kettenes, Dirk K.; Bart de Roos, Kris; Sipma, Gerben; and Stoffelsma, Jan, 4,380,655, Cl. 549-472.000.

Paddock, Stephen W.; and Tershak, Andrew T., to Whirlpool Corporation. Temperature sensing circuit with high noise immunity. 4,380,155, Cl. 62-229.000.

Palmer, Thomas W. Gas operated valve actuator. 4,380,325, Cl. 251-14.000.

Palombo, Gaston; and Fortescue, Stephen M., to Dataproducts Corporation. Magnetic printer and printhead. 4,380,768, Cl. 346-74.500.

Panov, Vladimir V.: *See*—
Mazurin, Igor M.; Netupsky, Mikhail L.; Shevtsov, Alexandr V.; Gladky, Viktor T.; Dmitriev, Nikolai A.; Lyapin, Andrei G.; Polyakov, Alexandr V.; Myshev, Mikhail A.; and Panov, Vladimir V., 4,380,532, Cl. 423-469.000.

Pap nee Imrenyi, Gabriella: *See*—
Szejtli, Jozsef; Budai, Zsuzsanna; Tetenyi nee Erdosi, Magda; and Pap nee Imrenyi, Gabriella, 4,380,626, Cl. 536-103.000.

Parmenon, Daniel: *See*—
Godat, Jean; Parmenon, Daniel; Krzywdziak, Alain; and Boudin, Daniel, 4,380,399, Cl. 366-289.000.

Parmer, Kenneth R.; and Stape, William J., to AMP Incorporated. Cartridge, holder and connector system. 4,380,360, Cl. 339-17.0CF.

Patel, Raman: *See*—
Coran, Aubert Y.; and Patel, Raman, 4,380,606, Cl. 525-196.000.

Patzelt, Helmut: *See*—
Waldschutz, Heinz; Rauner, Franz; and Patzelt, Helmut, 4,380,341, Cl. 277-56.000.

Pauperas, Victor: *See*—
Casale, Thomas M.; Schmitz, Frederick J., Jr.; and Pauperas, Victor, 4,380,246, Cl. 137-375.000.

Pavlik, Dennis: *See*—
Swensrud, Roger L.; Pavlik, Dennis; and DeLuca, John J., 4,380,362, Cl. 339-112.00L.

Payer-Lux Elektroprodukte Gesellschaft m.b.H.: *See*—
Naimer, Gundolf; and Hauer, Kurt, 4,380,121, Cl. 30-42.000.

Payne, Roger A.: *See*—
Gray, Herbert W.; and Payne, Roger A., 4,380,252, Cl. 138-125.000.

Payton, Charles E.: *See*—
Waters, Kenneth H.; Hopkins, John R.; and Payton, Charles E., 4,380,806, Cl. 367-27.000.

Peabody Coal Company: *See*—
Campbell, John A. L.; Moynihan, Daniel J.; Roper, William D.; and Willis, Earl C., 4,380,353, Cl. 299-12.000.

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Gallagher, Ronald B.; and Novits, Michael F., 4,380,605, Cl. 525-14.000.

Perrey, Hermann: *See*—
Neuhaus, Karl-Friedrich; Perrey, Hermann; Fuhr, Karl; Freier, Hans-Joachim; and Bendszus, Otto, 4,380,604, Cl. 524-873.000.

Perry, Richard E.: *See*—
Tooke-Kirby, David H.; Perry, Richard E.; and Arbuckle, Kenneth H., 4,380,599, Cl. 525-370.000.

Petaway, John B.; and Gabriel, Otis C. Quick release fire hose cabinet. 4,380,269, Cl. 169-51.000.

Peterpaul, Joseph, to Thomas & Betts Corporation. Cable slitting and spreading tool. 4,380,256, Cl. 140-106.000.

Peters, Mary K., to Eli Lilly and Company. Synthesis of acylated benzothiophenes. 4,380,635, Cl. 546-202.000.

Peterson Manufacturing Co.: *See*—
Potts, Virgil W., 4,380,793, Cl. 362-267.000.

Petijean, Christian: *See*—
Marchand, Maurice; and Petijean, Christian, 4,380,830, Cl. 455-327.000.

Petrocarbon Developments Ltd.: *See*—
Haslam, Alan A.; Isalski, Wieslaw H.; and Tomlinson, Terence R., 4,380,461, Cl. 62-11.000.

Petroleum Fermentations N.V.: *See*—
Gutnick, David L.; Rosenberg, Eugene; Belsky, Igal; and Zinaida, Zosim, 4,380,504, Cl. 252-356.000.

Pfaff, William, to Motorola, Inc. Peripheral interface adapter circuit for counter synchronization. 4,380,736, Cl. 328-73.000.

Pfeiler, Manfred, to Siemens Aktiengesellschaft. X-Ray diagnostic system comprising a radiography unit with an X-ray tube which emits a fan-shaped radiation beam. 4,380,818, Cl. 378-099.000.

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Johnson, Michael R., 4,380,542, Cl. 424-248.550.

Phillips Petroleum Company: *See*—
Hitzman, Donald O., 4,380,584, Cl. 435-313.000.
Ryan, Lawrence A., 4,380,317, Cl. 236-15.0BF.
Solomon, Paul W., 4,380,659, Cl. 549-532.000.

Phy, William S., to Fairchild Camera & Instrument Corp. Radiation protection for integrated circuits utilizing tape automated bonding. 4,380,566, Cl. 428-192.000.

Picker Corporation: *See*—
Everett, Dennis; and Jukic, Vjekoslav, 4,380,819, Cl. 378-114.000.

Pickering, Alan H., to English Electric Valve Company Limited. Magnetrons. 4,380,717, Cl. 315-39.510.

Pierre Fabre S.A.: *See*—
Mouzin, Gilbert; Cousse, Henri; and Stenger, Antoine, 4,380,667, Cl. 564-195.000.

Pierson, Darrell E.: *See*—
Brookhyser, Byron B.; Lictenwalter, Robert H.; McGee, Arthur L.; and Pierson, Darrell E., 4,380,259, Cl. 144-357.000.

Pike, Keith E.: *See*—
Skoch, Leroy V.; and Pike, Keith E., 4,380,424, Cl. 425-331.000.

Pilgrim Engineering Developments Limited: *See*—
Bunyan, Thomas W., 4,380,181, Cl. 81-57.380.

Pischinger, Anton, to Friedmann & Maier Aktiengesellschaft. Fuel injection pump for internal combustion engines. 4,380,222, Cl. 123-365.000.

Pitney Bowes Inc.: *See*—
Auerbach, David R., 4,380,210, Cl. 118-253.000.
Reid, Robert R.; Winkler, Edward; and Girard, Stephen E., 4,380,209, Cl. 118-253.000.

Platz, Rolf: *See*—
Rieber, Norbert; Platz, Rolf; and Fuchs, Werner, 4,380,642, Cl. 548-255.000.

PLM Aktiebolag: *See*—
Jakobsen, Kjell M.; and Nilsson, Claes T., 4,380,525, Cl. 264-521.000.

Plundrich, Winfried: *See*—
Dotzer, Richard; and Plundrich, Winfried, 4,380,170, Cl. 73-147.000.

Pohl, Lothar: *See*—
Sorensen, Norman L.; and Pohl, Lothar, 4,380,351, Cl. 296-217.000.

Polaroid Corporation: *See*—
Reynard, John M., 4,380,807, Cl. 367-97.000.

Polyakov, Alexandr V.: *See*—
Mazurin, Igor M.; Netupsky, Mikhail L.; Shevtsov, Alexandr V.; Gladky, Viktor T.; Dmitriev, Nikolai A.; Lyapin, Andrei G.; Polyakov, Alexandr V.; Myshev, Mikhail A.; and Panov, Vladimir V., 4,380,532, Cl. 423-469.000.

Pomante, Louis N., to Solid State Scientific, Inc. Method of making a semiconductor device with a seal. 4,380,115, Cl. 29-588.000.

Pommer, Ernst-Heinrich: *See*—
Sauter, Hubert; Ammermann, Eberhard; Rentzea, Costin; Zech, Bernd; Jung, Johann; and Pommer, Ernst-Heinrich, 4,380,546, Cl. 424-269.000.

Post, Willem P., to Thomassen & Drijver-Verblifa N.V. Squeezer flanger. 4,380,165, Cl. 72-355.000.

Postma, Gosse J., to U.S. Philips Corporation. Color television display tube with resistor for interference radiation reduction. 4,380,715, Cl. 315-3.000.

Potts, Virgil W., to Peterson Manufacturing Co. Submersible vehicular lamp assembly. 4,380,793, Cl. 362-267.000.

Poyser, Robert H.; and Turner, David H., to Beecham Group Limited. Tablets. 4,380,540, Cl. 424-233.000.

PPG Industries, Inc.: *See*—
Matesa, Joseph M., 4,380,463, Cl. 65-99.200.
Welsh, David A.; Dowbenko, Rostyslaw; Das, Suryya K.; Kania, Charles M.; and Christenson, Roger M., 4,380,601, Cl. 524-555.000.
Prabhu, Ashok N.; and Hang, Kenneth W., to RCA Corporation. Indium oxide resistor inks. 4,380,750, Cl. 338-308.000.
Pratt, Charles D. Bird house and method of making same. 4,380,336, Cl. 273-157.00R.
Pray, Winston C., to Flexible Steel Lacing Company. Method for applying belt fasteners to a belt. 4,380,109, Cl. 29-466.000.
Precision Plastic Products Corporation: *See*—
Alejandro Llera, Santos A. A., 4,380,299, Cl. 215-252.000.
Preux, Marie Vuissoz-de, heir: *See*—
Vuissoz, Constant, deceased; Mosoni-Vuissoz, Cesarine, heir; and Voide-Vuissoz, Suzanne, heir, 4,380,430, Cl. 431-347.000.
Prevot, Maurice: *See*—
Delfino, Jean-Jacques; and Prevot, Maurice, 4,380,480, Cl. 148-12.400.
Proebsting, Robert J., to Mostek Corporation. Tape burn-in circuit. 4,380,805, Cl. 365-201.000.
Qonaar Corporation: *See*—
Glinka, John S.; and Zack, Larry E., 4,380,316, Cl. 232-16.000.
Quirin, Michel: *See*—
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R. Howard Strasbaugh, Inc.: *See*—
Walsh, Thomas A., 4,380,412, Cl. 409-314.000.
Radley, Barry G.: *See*—
Desyllas, Peter L.; Radley, Barry G.; Rawsthorne, Alasdair; Eaton, John R.; and Murray, John E., 4,380,797, Cl. 364-200.000.
Raeder, Arthur; and Raeder, Celia R. Permanent one visit bonded bridge no drilling, and kit therefor. 4,380,435, Cl. 433-180.000.
Raeder, Celia R.: *See*—
Raeder, Arthur; and Raeder, Celia R., 4,380,435, Cl. 433-180.000.
Ralston Purina Company: *See*—
Skoch, Leroy V.; and Pike, Keith E., 4,380,424, Cl. 425-331.000.
Ramos, Pedro A. Hip prosthesis. 4,380,090, Cl. 3-1.912.
Rasberger, Michael; and Evans, Samuel, to Ciba-Geigy Corporation. N-Substituted 6-amino-dibenz[c,e][1,2]oxaphosphorines. 4,380,515, Cl. 260-936.000.
Rasberger, Michael, to Ciba-Geigy Corporation. Process for the production of 2,2'-dihydroxy-biphenyls. 4,380,676, Cl. 568-730.000.
Rathborne, Brian A.; and Ryan, Bruce R., to BOC Limited. Separation of air. 4,380,457, Cl. 55-33.000.
Rauner, Franz: *See*—
Waldschutz, Heinz; Rauner, Franz; and Patzelt, Helmut, 4,380,341, Cl. 277-56.000.
Rawsthorne, Alasdair: *See*—
Desyllas, Peter L.; Radley, Barry G.; Rawsthorne, Alasdair; Eaton, John R.; and Murray, John E., 4,380,797, Cl. 364-200.000.
Raytheon Company: *See*—
Nicholls, Robin P., 4,380,816, Cl. 375-94.000.
RCA Corporation: *See*—
Goodman, Alvin M., 4,380,773, Cl. 357-23.000.
Kapian, Leonard A., 4,380,740, Cl. 330-288.000.
Mazgy, James D., 4,380,741, Cl. 330-308.000.
Prabhu, Ashok N.; and Hang, Kenneth W., 4,380,750, Cl. 338-308.000.
Reder, Kenneth J. Tamper-resistant lock. 4,380,163, Cl. 70-364.00A.
Redien, Pierre: *See*—
Campagne, Jean-Claude; Chollet, Jean; and Redien, Pierre, 4,380,555, Cl. 426-549.000.
Regie Nationale des Usines Renault: *See*—
Allard, Pierre-Yves; and Leconte, Gilles, 4,380,799, Cl. 364-426.000.
Reich, Jack W., to Kimberly-Clark Corporation. Sanitary napkin with disposal means. 4,380,450, Cl. 604-386.000.
Reichelderfer, Richard F.; Vogel, Diane C.; and Tang, Marian C., to Branson International Plasma Corporation. Process and gas mixture for etching aluminum. 4,380,488, Cl. 156-643.000.
Reid, Robert R.; Winkler, Edward; and Girard, Stephen E., to Pitney Bowes Inc. Workpiece moistening apparatus. 4,380,209, Cl. 118-253.000.
Reinecke, Erich; and Klatt, Alfred, to WABCO Fahrzeugbremsen G.m.b.H. Gear shift control mechanism for servo-driven transmission. 4,380,177, Cl. 74-475.000.
Reinhardt, Bruce A.; and Arnold, Fred E., to United States of America, Air Force. Oxy- and thioaryl-phenylated aromatic heterocyclic polymers. 4,380,619, Cl. 526-259.000.
Reiss, Ronald J.: *See*—
Schneiter, John W.; Reiss, Ronald J.; and Enskat, Albert G., 4,380,310, Cl. 222-501.000.
Reliance Electric Company: *See*—
Griffin, Neil C., 4,380,175, Cl. 73-862.670.
Renga, James M.; and Wang, Pen-Chung, to Dow Chemical Company, The. Process for forming esters (II). 4,380,636, Cl. 546-326.000.
Reninger, James D. Candlelamp-table. 4,380,200, Cl. 108-23.000.
Rentzea, Costin: *See*—
Sauter, Hubert; Ammermann, Eberhard; Rentzea, Costin; Zeeh, Bernd; Jung, Johann; and Pommer, Ernst-Heinrich, 4,380,546, Cl. 424-269.000.
Repik, Clyde P.; and Leatherman, Alfred F., to Heller, William C., Jr. Inductively heated tooling and method for working plastic members. 4,380,484, Cl. 156-251.000.
Rexham Corporation: *See*—
Dickson, J. Douglas; Sweeney, J. David; and Coleman, Ronald K., 4,380,446, Cl. 493-11.000.
Rexroth GmbH: *See*—
Wusthof, Peter; and Schneider, Johann, 4,380,420, Cl. 418-61.00B.
Reynard, John M., to Polaroid Corporation. Echo recognition system. 4,380,807, Cl. 367-97.000.
Reynolds, Carlton J. Automatic transmission selector lever lock. 4,380,752, Cl. 340-52.00D.
Rhone Poulenc Industries: *See*—
Campagne, Jean-Claude; Chollet, Jean; and Redien, Pierre, 4,380,555, Cl. 426-549.000.
Richards, Joyce: *See*—
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Rieber, Norbert; Platz, Rolf; and Fuchs, Werner, to BASF Aktiengesellschaft. Simultaneous preparation of pyrazole and triazoles. 4,380,642, Cl. 548-255.000.
Riker Laboratories, Inc.: *See*—
Stern, Richard M., 4,380,543, Cl. 424-258.000.
Riley, Jean M.: *See*—
Orlando, Michael D.; and Riley, Jean M., 4,380,582, Cl. 435-239.000.
Rinneburger, Klaus: *See*—
Adamek, Manfred; and Rinneburger, Klaus, 4,380,783, Cl. 360-99.000.
Robert Bosch GmbH: *See*—
Eheim, Franz, 4,380,221, Cl. 123-343.000.
Kuhlmann, Gerhard; Wolf, Erwin; and Wahl, Gunter, 4,380,693, Cl. 200-350.000.
Wesemeyer, Jurgen; Haubner, Georg; and Meier, Werner, 4,380,225, Cl. 123-613.000.
Roberts, Elliott D. Dehydrator apparatus with unidirectional air flow control means. 4,380,127, Cl. 34-197.000.
Roberts, John T., to UOP Inc. Amines of alkoxydiphenyl esthers as antioxidants and lubricating oils and greases containing same. 4,380,497, Cl. 252-47.500.
Robertshaw Controls Company: *See*—
Weaver, Marvin P., 4,380,251, Cl. 137-877.000.
Robertson, William H.: *See*—
Walker, Jesse P.; and Robertson, William H., 4,380,095, Cl. 19-80.00R.
Robeson, Lloyd M.; and Matzner, Markus, to Union Carbide Corporation. Flame retardant polyarylate compositions. 4,380,598, Cl. 524-163.000.
Rocha, Frank; and Spector, George. Foot exerciser. 4,380,231, Cl. 128-57.000.
Rockwell International Corporation: *See*—
Clendening, Steven J., 4,380,815, Cl. 375-80.000.
Cunningham, Vernon R., 4,380,711, Cl. 307-491.000.
Fjeldsted, Thomas P., 4,380,363, Cl. 350-1.300.
Hallford, Ben R., 4,380,831, Cl. 455-327.000.
Roger, Gillet; and Henri, Nithart, to Alsthom-Atlantique; and Electricite de France. Dovetailed teeth for use in a system for fixing stator winding bars in a rotating electric machine. 4,380,713, Cl. 310-214.000.
Rogers, Colin Ward: *See*—
Smith, Joseph, 4,380,124, Cl. 33-433.000.
Rohde, Robert S.: *See*—
Buser, Rudolph G.; Rohde, Robert S.; and Nomiyama, Neal T., 4,380,391, Cl. 356-5.000.
Rohde, Wolfgang: *See*—
Habermehl, Diethard; Rohde, Wolfgang; Kucharzyk, Werner; and Siebert, Werner, 4,380,125, Cl. 34-10.000.
Rohm and Haas Company: *See*—
Chong, Berni P., 4,380,590, Cl. 521-33.000.
Rolls-Royce Limited: *See*—
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Romanova, Roza M.: *See*—
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Romeo, Arthur L.; Bonelli, Robert T.; and Fishman, Harvey E., to Hazeltine Corporation. External magnetic field compensator for a CRT. 4,380,716, Cl. 315-8.000.
Roper Corporation: *See*—
Butts, Orville R., 4,380,698, Cl. 219-492.000.
Roper, William D.: *See*—
Campbell, John A. L.; Moynihan, Daniel J.; Roper, William D.; and Willis, Earl C., 4,380,353, Cl. 299-12.000.
Roscher, Gunter; Schaum, Helmut; and Schmitz, Heinz, to Hoechst Aktiengesellschaft. Process for the preparation of practically formic acid-free acetic acid. 4,380,663, Cl. 562-536.000.
Rose, Robert C.: *See*—
Leis, Michael D.; and Rose, Robert C., 4,380,723, Cl. 318-314.000.
Rosenberg, Eugene: *See*—
Gutnick, David L.; Rosenberg, Eugene; Belsky, Igal; and Zinaida, Zosim, 4,380,504, Cl. 252-356.000.
Rosenberry, George M., Jr.: *See*—
Liebermann, Howard H.; Frischmann, Peter G.; and Rosenberry, George M., Jr., 4,380,572, Cl. 428-592.000.
Rosler, Helmut, to Siemens Aktiengesellschaft. Digital semiconductor circuit. 4,380,705, Cl. 307-247.00R.

Roto-Finish Company, Inc.: *See*—
Balz, Gunther W., 4,380,137, Cl. 51-163.100.
Rozzi, Mario, to Detroit Radiant Products Company. Safety tip-over device for portable gas-fired infrared radiant heater. 4,380,428, Cl. 431-88.000.
Ruckel, Erwin R.; and Epstein, Martin, to Arizona Chemical Company. Inert rosin esters and process for preparing the same. 4,380,513, Cl. 260-104.000.
Rudd, Thomas H.: *See*—
Gray, Roger, 4,380,727, Cl. 322-28.000.
Rumba, Alma A.: *See*—
Karklin, Roman Y.; Rumba, Alma A.; and Azanda, Via K., 4,380,583, Cl. 435-242.000.
Runions, Sinville, to International Shoe Machine Corporation. Cement applying machine and method. 4,380,524, Cl. 264-263.000.
Runkle, Charles J.: *See*—
Otstot, Roger S.; and Runkle, Charles J., 4,380,460, Cl. 55-158.000.
Rushton, John: *See*—
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Rutgerswerke Aktiengesellschaft: *See*—
Stadelhofer, Jurgen; Franck, Heinz-Gerhard; Koch, Karl H.; and Marrett, Rolf, 4,380,454, Cl. 44-1.00B.
Ryan, Bruce R.: *See*—
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Ryan, Lawrence A., to Phillips Petroleum Company. Furnace control. 4,380,317, Cl. 236-15.0BF.
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Wright, Howard J.; and Scherrer, Joseph H., 4,380,611, Cl. 525-418.000.
Schmidt, Thomas R., to Miles Laboratories, Inc. Method of imparting a reddish color to seasoning salts. 4,380,553, Cl. 426-250.000.
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Shevakin, Jury F.; Shpichinetsky, Efim S.; Fedorenko, Valentina P.; Efremov, Boris N.; Klevchenkova, Maria N.; Andrjuschenko, Ivan A.; Krasnoselsky, Iosif A.; Anikeev, Evgeny F.; Ivanov, Evgeny A.; Khomyachkov, Anatoly P.; Shvarts, Naum A.; Kozhevnikova, Ljudmila V.; Romanova, Roza M.; and Zhivotchenko, Alexandr D. Silver-based alloy. 4,380,528, Cl. 420-505.000.
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Dotzer, Richard; and Plundrich, Winfried, 4,380,170, Cl. 73-147.000.
Endlicher, Frank; and Koch, Rudolf, 4,380,755, Cl. 382-68.000.
Intichar, Lutz; Schnapper, Christoph; and Weghaupt, Erich, 4,380,712, Cl. 310-52.000.
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Siggel, Erhard; Wick, Gerhard; Linhart, Heinz; and Kestler, Erich, to Akzona Incorporated. Filaments and fibers having discontinuous cavities. 4,380,594, Cl. 521-182.000.
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Signode Corporation: *See*—
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Simo, Miroslav A. Bleeder attachment for arrows. 4,380,340, Cl. 273-416.000.
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Sims, Steve A.: *See*—
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Slaugh, Lynn H., to Shell Oil Company. Conversion of alkanols to ethers. 4,380,657, Cl. 549-509.000.
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Smith, Joseph, to Rogers, Colin Ward, a part interest. Drawing board. 4,380,124, Cl. 33-433.000.
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Smith, Terry J., to AMP Incorporated. Method and apparatus for measuring normal contact forces in electrical connector. 4,380,171, Cl. 73-161.000.
Smock, William L. Oscillating-accumulating conveyor system. 4,380,287, Cl. 198-648.000.
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Soderberg, Mark S.; Hametner, Albert L.; Leppink, Herman F.; and Strand, David E., to Boeing Company, The. Automatic drill deburring and sorting machine. 4,380,295, Cl. 209-558.000.
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Velenyi, Louis J., and Krupa, Andrew S., 4,380,672, Cl. 568-310.000.
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Steffen, Klaus-Dieter, to Dynamit Nobel Aktiengesellschaft. Method of preparing quinolines, naphthyridines and other nitrogen bi-heterocyclic compounds. 4,380,632, Cl. 544-279.000.
Steidinger, Donald J., to Wallace Computer Services, Inc. Mailer. 4,380,315, Cl. 229-69.000.
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Stern, Richard M., to Riker Laboratories, Inc. Antimicrobial 8-cyano-6,7-dihydro-5-methyl-1-oxo-1H,5H-benzo[ij]quinolizine-2-carboxylic acids. 4,380,543, Cl. 424-258.000.
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Stewart, James A., to GTE Automatic Electric Laboratories, Inc. Power supply control circuit for subscriber carrier telephone system. 4,380,687, Cl. 179-2.0BC.
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Stoll, Kurt. Choke unit. 4,380,250, Cl. 137-599.000.
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Stone, Kenneth. Clamp for bounce-flash apparatus. 4,380,787, Cl. 362-16.000.
Stowe, David W., to Gould Inc. Fiber optic interferometer. 4,380,394, Cl. 356-358.000.
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Suchy, Milos, to Hoffmann-La Roche Inc. 2-[4-(4-Substituted phenoxy)phenoxy]propanoic acids and esters. 4,380,661, Cl. 560-62.000.
Suda, Shigeyuki; and Tanaka, Kazuo, to Canon Kabushiki Kaisha. Zoom objective. 4,380,376, Cl. 350-427.000.
Suga, Yoshinori: *See*—
Hasuo, Masayoshi; Suga, Yoshinori; Kitada, Hisashi; Maruyama, Yasuo; and Gotoh, Junichi, 4,380,608, Cl. 525-247.000.
Sugiyama, Hiroyuki: *See*—
Hirata, Atsumi; Tajima, Osamu; Kaneda, Isami; Sugiyama, Hiroyuki; Saito, Takashi; and Mochizuki, Masafumi, 4,380,780, Cl. 360-97.000.
Sulkoski, Jerome; and Brugger, Richard D. Apparatus to alert a deaf person. 4,380,759, Cl. 340-407.000.
Sulzbacher, Horst, to Voest-Alpine Aktiengesellschaft. Process and apparatus for continuously reducing and melting metal oxides and/or pre-reduced metallic materials. 4,380,469, Cl. 75-38.000.
Sun, Shan C.; and Church, Larry L., to Westinghouse Electric Corp. Pulse modulator using capacitor charging and discharging circuits. 4,380,746, Cl. 332-9.00R.
Sundman, Carl-Erik; and Hagglund, Bengt G., to KenoGard A.B. Treatment of wood using branched-chain aliphatic carboxylic acids. 4,380,561, Cl. 427-421.000.
Sunkist Growers, Inc.: *See*—
Carter, Ned C.; and Cramer, Jerry W., 4,380,194, Cl. 101-35.000.
Suppa, Vito, to Thomson-CSF. Droppable airborne buoy. 4,380,440, Cl. 441-30.000.
Suzuki, Haruo; and Hashimoto, Shigeyoshi, to Nippondenso Co., Ltd. Die-casting method. 4,380,261, Cl. 164-120.000.
Suzuki, Toshio, to Toray Silicone Co., Ltd. Coating material for optical communication glass fibers. 4,380,367, Cl. 350-96.340.
Swanson, Barry J.: *See*—
Koch, Tad H.; and Swanson, Barry J., 4,380,647, Cl. 548-519.000.
Swartz, Frederick R., to Clamp-All Corp. Pipe clamping assembly. 4,380,348, Cl. 285-236.000.
Sweeney, J. David: *See*—
Dickson, J. Douglas; Sweeney, J. David; and Coleman, Ronald K., 4,380,446, Cl. 493-11.000.
Sweet, Roger; and Tribe, Leonard T., to Kelsey-Hayes Co. Slack adjuster for vehicle brakes. 4,380,276, Cl. 188-79.50K.
Swensrud, Roger L.; Pavlik, Dennis; and DeLuca, John J., to Westinghouse Electric Corp. Directly cooled bolted series connection of generator stator coils. 4,380,362, Cl. 339-112.00L.
Swiss Aluminium Ltd.: *See*—
Gut, Edwin; Arnold, Erwin; and Friedli, Hans, 4,380,492, Cl. 204-67.000.
Sybron Corporation: *See*—
Lawson, Alfred C., 4,380,794, Cl. 362-296.000.
Synthelabo: *See*—
Caillot, Luc, 4,380,233, Cl. 128-204.210.
Szala, Lawrence E.: *See*—
Lee, Minyoung; Szala, Lawrence E.; and Tuft, Roy E., 4,380,471, Cl. 419-11.000.
Szejtli, Jozsef; Budai, Zsuzsanna; Tetenyi nee Erdosi, Magda; and Pap nee Imrenyi, Gabriella, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T. Hormonal plant growth regulator. 4,380,626, Cl. 536-103.000.
Tabb, David L.: *See*—
Magers, Thomas A.; and Tabb, David L., 4,380,585, Cl. 436-66.000.
Tacke, Horst: *See*—
Klaus, Arthur; and Tacke, Horst, 4,380,313, Cl. 227-130.000.
Tadema, Jan C., to Wiener & Co. B.V. Device for preparing chocolate. 4,380,193, Cl. 99-452.000.
Taguchi, Masaaki, to Kabushiki Kaisha Daini Seikosha. Phase transition mode liquid crystal display device. 4,380,372, Cl. 350-346.000.
Tahara, Yoshiyuki; Koyama, Hiroyasu; Komatsu, Yasuhiro; Kubota, Reiko; and Takahashi, Toshihiro, to Nisshin Flour Milling Co., Ltd. Decaprenylamine derivatives. 4,380,668, Cl. 564-391.000.
Tajima, Osamu: *See*—
Hirata, Atsumi; Tajima, Osamu; Kaneda, Isami; Sugiyama, Hiroyuki; Saito, Takashi; and Mochizuki, Masafumi, 4,380,780, Cl. 360-97.000.
Takada, Juichiro. Warning system for passive vehicle occupant restraint belts. 4,380,751, Cl. 340-52.00E.
Takahashi, Kenji; and Miyahara, Junji, to Fuji Photo Film Co., Ltd. Radiation image storage panel. 4,380,702, Cl. 250-327.200.
Takahashi, Kenji: *See*—
Kawabata, Minoru; Honaga, Susumu; and Takahashi, Kenji, 4,380,472, Cl. 419-9.000.
Takahashi, Toshihiro: *See*—
Tahara, Yoshiyuki; Koyama, Hiroyasu; Komatsu, Yasuhiro; Kubota, Reiko; and Takahashi, Toshihiro, 4,380,668, Cl. 564-391.000.
Takahashi, Yuji, to Canon Kabushiki Kaisha. Developer supply device. 4,380,309, Cl. 222-450.000.
Takanashi, Akihiro: *See*—
Kuniyoshi, Shinji; Takanashi, Akihiro; and Kurosaki, Toshiei, 4,380,395, Cl. 356-401.000.
Takasaki, Yukio: *See*—
Ishioka, Sachio; Shimomoto, Yasuharu; Imamura, Yoshinori; Ataka, Saburo; Tanaka, Yasuo; Matsubara, Hirokazu; Takasaki, Yukio; and Maruyama, Eiichi, 4,380,557, Cl. 427-38.000.
Takatori, Yasushi, to Canon Kabushiki Kaisha. Ink jet recording process and an apparatus therefor. 4,380,771, Cl. 346-140.00R.
Takebe, Hideharu; and Kobayashi, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Automatic sweep digital tuning circuit. 4,380,825, Cl. 455-164.000.
Takeda Chemical Industries, Ltd.: *See*—
Ishida, Yasuo, 4,380,466, Cl. 71-96.000.
Ochiai, Michihiko; and Morimoto, Akira, 4,380,541, Cl. 424-246.000.
Takeda, Kazuo: *See*—
Kaneki, Tadashi; and Takeda, Kazuo, 4,380,405, Cl. 403-318.000.
Takeuchi, Mikio: *See*—
Yano, Hiroshi; Kawasaki, Teruo; Nomura, Hiroyuki; and Takeuchi, Mikio, 4,380,733, Cl. 324-166.000.
Talres Development (N.A.) N.V.: *See*—
Mufti, Khizar S.; and Khan, Riaz A., 4,380,476, Cl. 127-46.300.
Taluba, Anthony P.; and Taluba, Paul A. Molded squeeze toy including whistle. 4,380,134, Cl. 46-117.000.

Taluba, Paul A.: *See*—
Taluba, Anthony P.; and Taluba, Paul A., 4,380,134, Cl. 46-117.000.
Tamiya, Masaru: *See*—
Kohama, Hiroyuki; Tamiya, Masaru; Mizukami, Sunichi; Kaneko, Dentaro; and Kimura, Yoshio, 4,380,328, Cl. 266-177.000.
Tamura, Akihiko: *See*—
Yasuda, Kazuo; Tamura, Akihiko; and Nakamura, Yoshimitsu, 4,380,386, Cl. 355-3.00R.
Tamura, Naoyuki: *See*—
Ohmata, Ken; Aoki, Hideya; and Tamura, Naoyuki, 4,380,368, Cl. 350-117.000.
Tamura, Tetsuo, to Canon Kabushiki Kaisha. Control mechanism for a zoom lens. 4,380,378, Cl. 350-429.000.
Tanabe Siyaku Co., Ltd.: *See*—
Yoneda, Naoto; Kato, Jyoji; and Kinashi, Keizo, 4,380,644, Cl. 548-321.000.
Tanaka, Kazuo: *See*—
Suda, Shigeyuki; and Tanaka, Kazuo, 4,380,376, Cl. 350-427.000.
Tanaka, Yasuo: *See*—
Ishioka, Sachio; Shimomoto, Yasuharu; Imamura, Yoshinori; Ataka, Saburo; Tanaka, Yasuo; Matsubara, Hirokazu; Takasaki, Yukio; and Maruyama, Eiichi, 4,380,557, Cl. 427-38.000.
Tanaka, Yoshiaki; and Inami, Mamoru, to Victor Company of Japan, Ltd. Signal spectrum display apparatus. 4,380,732, Cl. 324-77.00D.
Tanenbaum, Joseph M. Apparatus for shear testing welds. 4,380,174, Cl. 73-842.000.
Tang, Marian C.: *See*—
Reichelderfer, Richard F.; Vogel, Diane C.; and Tang, Marian C., 4,380,488, Cl. 156-643.000.
Taniguchi, Hiroshi: *See*—
Kitamura, Sadafumi; and Taniguchi, Hiroshi, 4,380,779, Cl. 358-330.000.
Tateoka, Masamichi; and Minoura, Kazuo, to Canon Kabushiki Kaisha. Exposure correcting device. 4,380,390, Cl. 355-71.000.
Taylor, John A., to Extracorporeal Medical Specialties, Inc. Process for producing hollow fibres having a uniform wall thickness and a non-uniform cross-sectional area. 4,380,520, Cl. 264-40.300.
Taylor, William H. Gasoline fuel additive composition. 4,380,456, Cl. 44-68.000.
Teccor Electronics, Inc.: *See*—
Webb, Monty F., 4,380,114, Cl. 29-588.000.
Tecumseh Products Company: *See*—
Kandler, William C., 4,380,216, Cl. 123-90.650.
Wasmer, Anthony E.; and Koenigs, Stephen L., 4,380,217, Cl. 123-146.50A.
Teleflex Incorporated: *See*—
Bennett, William G.; and Spease, Arthur L., 4,380,178, Cl. 74-501.00P.
Terrell, Christopher, to Chloride Group Limited. Pivot mounting. 4,380,792, Cl. 362-250.000.
Tershak, Andrew T.: *See*—
Paddock, Stephen W.; and Tershak, Andrew T., 4,380,155, Cl. 62-229.000.
Tetenyi nee Erdosi, Magda: *See*—
Szejtli, Jozsef; Budai, Zsuzsanna; Tetenyi nee Erdosi, Magda; and Pap nee Imrenyi, Gabriella, 4,380,626, Cl. 536-103.000.
Tevopharm-Schiedam B.V.: *See*—
van Maanen, Johannes D., 4,380,283, Cl. 198-456.000.
Texaco Inc.: *See*—
MacLean, John P.; Cantwell, J. Edward; Brown, John D.; and Hoy, Harold D., 4,380,105, Cl. 29-157.00R.
Smith, Harry D., Jr.; and Schultz, Ward E., 4,380,701, Cl. 250-266.000.
Texas Gas Transport Company: *See*—
Bresie, Don A.; Fowler, Donald W.; and Burns, Jack M., 4,380,242, Cl. 137-113.000.
Texas Instruments Incorporated: *See*—
Evans, Doyle R.; and Tuthill, Richard E., 4,380,357, Cl. 339-17.0CF.
Frantz, Gene A., 4,380,371, Cl. 350-336.000.
Goldstein, Kenneth; and Sharpe, Claude A., 4,380,767, Cl. 343-745.000.
Hart, Patrick J., 4,380,742, Cl. 331-1.00A.
Tezuka, Nobuo, to Canon Kabushiki Kaisha. Camera with motor driven winding-up device. 4,380,381, Cl. 354-173.000.
Th. Goldschmidt AG: *See*—
Koerner, Gotz; Sanger, Gerd; Fink, Hans-Ferdi; and Grassmann, Friedhelm, 4,380,503, Cl. 252-314.000.
Theohar, Carl: *See*—
Kleinlogel, Horst; and Theohar, Carl, 4,380,550, Cl. 424-324.000.
Thermacore, Inc.: *See*—
Eastman, George Y., 4,380,154, Cl. 60-682.000.
Thiokol Corporation: *See*—
Davis, Leland E.; Dahle, David P.; Schneiter, Fred E.; and Kirchoff, George F., 4,380,346, Cl. 280-736.000.
Thomas & Betts Corporation: *See*—
Peterpaul, Joseph, 4,380,256, Cl. 140-106.000.
Thomas, Harold T.; and Wrobel, Joseph J., to Eastman Kodak Company. Element for recording by thermal deformation. 4,380,769, Cl. 346-135.100.
Thomassen & Drijver-Verblifa N.V.: *See*—
Post, Willem P., 4,380,165, Cl. 72-355.000.
Thomson-CSF: *See*—
Curtinot, Jean C.; Delestre, Xavier; and Fouillet, Jean, 4,380,747, Cl. 333-202.000.
Kantorowicz, Gerard, 4,380,744, Cl. 331-107.00R.
Suppa, Vito, 4,380,440, Cl. 441-30.000.
Thomson, George A.; and Haynes, Robert, to Thomson-Gordon Limited. Railroad vehicle pedestal wear liner. 4,380,199, Cl. 105-225.000.
Thomson-Gordon Limited: *See*—
Thomson, George A.; and Haynes, Robert, 4,380,199, Cl. 105-225.000.
TII Industries Inc.: *See*—
Simokat, Frank L., 4,380,688, Cl. 179-84.00R.
Tikhonov, Jury N.: *See*—
Abduganiev, Abdurakhim; Tikhonov, Valentin N.; Shlykov, Gennady N.; Zhestkov, Vitaly I.; Krjuk, Timur P.; Mukhin, Viktor M.; and Tikhonov, Jury N., 4,380,143, Cl. 57-89.000.
Tikhonov, Valentin N.: *See*—
Abduganiev, Abdurakhim; Tikhonov, Valentin N.; Shlykov, Gennady N.; Zhestkov, Vitaly I.; Krjuk, Timur P.; Mukhin, Viktor M.; and Tikhonov, Jury N., 4,380,143, Cl. 57-89.000.
TMC Corporation: *See*—
Wittmann, Heinz, 4,380,345, Cl. 280-605.000.
Tohi, Yasusuke: *See*—
Kato, Yoshiaki; Fushida, Akira; Ueda, Yasuo; Tohi, Yasusuke; and Aizawa, Tatsuo, 4,380,196, Cl. 101-453.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Ueno, Tsuyoshi; and Mukai, Hideo, 4,380,384, Cl. 355-3.0CH.
Tolley, Andrew T.: *See*—
Tolley, Calvert B.; and Tolley, Andrew T., 4,380,094, Cl. 17-71.000.
Tolley, Calvert B.; and Tolley, Andrew T., to Sea Savory Inc. Crab processing machine. 4,380,094, Cl. 17-71.000.
Tomlinson, Terence R.: *See*—
Haslam, Alan A.; Isalski, Wieslaw H.; and Tomlinson, Terence R., 4,380,461, Cl. 62-11.000.
Tooke-Kirby, David H.; Perry, Richard E.; and Arbuckle, Kenneth H., to Berger, Jenson and Nicholson Ltd. Organotin polymers method of making them and paints containing them. 4,380,599, Cl. 525-370.000.
Toray Industries, Inc.: *See*—
Chiba, Kazumasa; Kobayashi, Kazuhiko; and Muraki, Toshio, 4,380,622, Cl. 528-288.000.
Toray Silicone Co., Ltd.: *See*—
Suzuki, Toshio, 4,380,367, Cl. 350-96.340.
Torii, Soichi, to Torri Winding Machine Co., Ltd. Device for guiding a knitted or woven fabric. 4,380,311, Cl. 226-190.000.
Torri Winding Machine Co., Ltd.: *See*—
Torii, Soichi, 4,380,311, Cl. 226-190.000.
Toshiba Battery Co., Ltd.: *See*—
Yoshida, Kazumasa; and Watabe, Michio, 4,380,576, Cl. 429-27.000.
Toshiba Kikai Kabushiki Kaisha: *See*—
Motomura, Noriyuki; and Tsuboi, Hiroyuki, 4,380,801, Cl. 364-565.000.
Toyoda Koki Kabushiki Kaisha: *See*—
Kawabata, Minoru; Honaga, Susumu; and Takahashi, Kenji, 4,380,472, Cl. 419-9.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Kubo, Seitoku; Kuramochi, Koujiro; and Kyushima, Tatsuo, 4,380,179, Cl. 74-762.000.
Trafford, Larry F., to General Signal Corporation. Lamp socket. 4,380,358, Cl. 339-17.00D.
Tribe, Leonard T.: *See*—
Sweet, Roger; and Tribe, Leonard T., 4,380,276, Cl. 188-79.50K.
Trim Parts Inc.: *See*—
Ayotte, Gordon R., 4,380,563, Cl. 428-40.000.
Trudel, Murray L.: *See*—
Lockwood, George C.; and Trudel, Murray L., 4,380,804, Cl. 365-184.000.
Tsai, Thomas Y. R.: *See*—
Wiesner, Karel; and Tsai, Thomas Y. R., 4,380,624, Cl. 536-5.000.
Tsuboi, Hiroyuki: *See*—
Motomura, Noriyuki; and Tsuboi, Hiroyuki, 4,380,801, Cl. 364-565.000.
Tsuji, Sadahiko: *See*—
Sato, Yasuhisa; and Tsuji, Sadahiko, 4,380,377, Cl. 350-427.000.
Tsujimoto, Shigenori: *See*—
Kawatani, Kimio; Tsujimoto, Shigenori; and Kaji, Ryoji, 4,380,475, Cl. 106-238.000.
Tsukioka, Kazumi: *See*—
Miyao, Fumio; and Tsukioka, Kazumi, 4,380,777, Cl. 358-178.000.
Tuan, Hsing T., to Burroughs Corporation. Read-only/read-write memory. 4,380,803, Cl. 365-183.000.
Tuchscherer, Lawrence D.: *See*—
Blanchard, Houston F.; and Tuchscherer, Lawrence D., 4,380,692, Cl. 200-61.45R.
Tuft, Roy E.: *See*—
Lee, Minyoung; Szala, Lawrence E.; and Tuft, Roy E., 4,380,471, Cl. 419-11.000.
Turiot, Andre: *See*—
Masclet, Jean; and Turiot, Andre, 4,380,323, Cl. 244-102.00R.
Turner, David H.: *See*—
Poyser, Robert H.; and Turner, David H., 4,380,540, Cl. 424-233.000.
Turner, George F. A. M., to Ciba-Geigy AG. Sheet material guiding means. 4,380,333, Cl. 271-272.000.
Tuschen, Jurgen: *See*—
Steinberger, Helmut; Kortmann, Wilfried; and Tuschen, Jurgen, 4,380,451, Cl. 8-477.000.
Tuthill, Richard E.: *See*—
Evans, Doyle R.; and Tuthill, Richard E., 4,380,357, Cl. 339-17.0CF.

Udovich, Carl A.; and Meyers, Bernard L., to Standard Oil Company (Indiana). Oxidation of butane to maleic anhydride. 4,380,648, Cl. 549-259.000.

Ueda, Yasuo: *See*—
Kato, Yoshiaki; Fushida, Akira; Ueda, Yasuo; Tohi, Yasusuke; and Aizawa, Tatsuo, 4,380,196, Cl. 101-453.000.

Ueno, Keisuke: *See*—
Masuda, Shuji; and Ueno, Keisuke, 4,380,568, Cl. 428-276.000.

Ueno, Tsuyoshi; and Mukai, Hideo, to Tokyo Shibaura Denki Kabushiki Kaisha. Charging device for electronic copier. 4,380,384, Cl. 355-3.0CH.

Ulmer, Harry E.: *See*—
Mathew, Chempolil T.; and Ulmer, Harry E., 4,380,660, Cl. 556-422.000.

Umetsu, Shinjiro: *See*—
Nagata, Koichi; and Umetsu, Shinjiro, 4,380,832, Cl. 455-343.000.

Umezawa, Hamao; Okami, Yoshiro; and Kondo, Shinichi, to Zaidan Hojin Biseibutsu Kagaku Kenyku Kai. Istamycins and streptomyces culture for the production thereof. 4,380,581, Cl. 435-80.000.

Underhill, Michael J.; and Walters, Nigel J., to U.S. Philips Corporation. Frequency synthesizer of the phase lock loop type. 4,380,743, Cl. 331-1.00A.

Uniflo Resources, Inc.: *See*—
Martin, Keith R., 4,380,268, Cl. 166-304.000.

Unimation, Inc.: *See*—
Masaki, Ichiro, 4,380,696, Cl. 219-124.340.

Union Carbide Corporation: *See*—
Baskent, Feyyaz O.; and Sandner, Michael R., 4,380,591, Cl. 521-115.000.
Kallen, George H., 4,380,700, Cl. 250-202.000.
Robeson, Lloyd M.; and Matzner, Markus, 4,380,598, Cl. 524-163.000.

U.S. Industries, Inc.: *See*—
Williams, William R., 4,380,214, Cl. 119-51.0CF.

United States of America
Air Force: *See*—
Korski, Victor E., 4,380,788, Cl. 362-62.000.
Peart, Leland L.; and Farrar, John, 4,380,763, Cl. 340-870.160.
Reinhardt, Bruce A.; and Arnold, Fred E., 4,380,619, Cl. 526-259.000.
Army: *See*—
Buser, Rudolph G.; Rohde, Robert S.; and Nomiyama, Neal T., 4,380,391, Cl. 356-5.000.
Orlando, Michael D.; and Riley, Jean M., 4,380,582, Cl. 435-239.000.
Energy: *See*—
Blocher, John M., Jr.; Veigel, Neil D.; and Landrigan, Richard B., 4,380,556, Cl. 427-6.000.
Conner, William V., 4,380,470, Cl. 75-122.700.
Fox, Ronald L., 4,380,267, Cl. 166-303.000.
Glasgow, Lyle E., 4,380,229, Cl. 126-418.000.
Lee, Fred C.; and Carter, Roy A., 4,380,795, Cl. 363-131.000.
Liebermann, Howard H.; Frischmann, Peter G.; and Rosenberry, George M., Jr., 4,380,572, Cl. 428-592.000.
Navy: *See*—
Atkins, Ronald L., 4,380,634, Cl. 546-89.000.
Baitis, A. Erich; and Woolaver, Dennis A., 4,380,206, Cl. 114-122.000.
Barlow, Michael L.; and Lindstrum, Alan L., 4,380,745, Cl. 331-176.000.
Eaton, Jefferson O., 4,380,197, Cl. 102-228.000.
Kazlaukas, Gasparas, 4,380,697, Cl. 219-136.000.
Yoder, Nax N., 4,380,774, Cl. 357-34.000.

U.S. Philips Corporation: *See*—
Adamek, Manfred; and Rinneburger, Klaus, 4,380,783, Cl. 360-99.000.
Bouman, Anton J.; and Geertsema, Eise B., 4,380,714, Cl. 313-549.000.
De Bijl, Adrianus M. J.; and Chermin, Hubertus M. J., 4,380,719, Cl. 315-101.000.
Franken, Adrianus J. J.; Coolen, Franciscus M.; Khoe, Giok D.; Langerhorst, Jacob; and Smulders, Henricus W. W., 4,380,366, Cl. 350-96.210.
Harding, Geoffrey; and Wagner, Wolfgang, 4,380,817, Cl. 378-87.000.
Hart, Cornelis M., 4,380,708, Cl. 307-457.000.
Monnier, Michel J.; Monneraye, Marc A.; Foucher, Claude; and Le Marchant, Pierre, 4,380,699, Cl. 235-492.000.
Postma, Gosse J., 4,380,715, Cl. 315-3.000.
Underhill, Michael J.; and Walters, Nigel J., 4,380,743, Cl. 331-1.00A.
Velo, Henri J., 4,380,739, Cl. 330-254.000.

University of Missouri, The Curators of the: *See*—
Graham, Ellis R., 4,380,169, Cl. 73-73.000.

University Patents, Inc.: *See*—
Koch, Tad H.; and Swanson, Barry J., 4,380,647, Cl. 548-519.000.

UOP Inc.: *See*—
Arena, Blaise J., 4,380,679, Cl. 568-863.000.
Arena, Blaise J., 4,380,680, Cl. 568-863.000.
Kurek, Paul R., 4,380,677, Cl. 568-788.000.
Maffet, Vere, 4,380,496, Cl. 210-780.000.
Roberts, John T., 4,380,497, Cl. 252-47.500.

Upjohn Company, The: *See*—
White, David R., 4,380,651, Cl. 549-361.000.
White, David R., 4,380,652, Cl. 549-361.000.

Ursillo, Henry G. Total energy heating unit. 4,380,153, Cl. 60-648.000.

Usugi, Kikuo, to Clarion Co., Ltd. Control system for channel selection. 4,380,826, Cl. 455-165.000.

Uzee, Andre J.: *See*—
Moreno, Carlos M.; Bridges, Robert D.; and Uzee, Andre J., 4,380,521, Cl. 264-49.000.

V-T Rhythms, Inc.: *See*—
Holcomb, Gayle, 4,380,185, Cl. 84-1.030.

Vallourec: *See*—
Delfino, Jean-Jacques; and Prevot, Maurice, 4,380,480, Cl. 148-12.400.

Vance, Fred L., Jr.; Guerra, Rafael E.; and Christenson, Christopher P., to Dow Chemical Company, The. Polymerization of olefins in the presence of chromium-containing catalysts. 4,380,616, Cl. 526-101.000.

Vancsa, Gyorgy I., to Westinghouse Electric Corp. Data acquisition system and analog to digital converter therefor. 4,380,757, Cl. 340-347.0CC.

van den Bosch, Steven; Kettenes, Dirk K.; Bart de Roos, Kris; Sipma, Gerben; and Stoffelsma, Jan, to P.F.W. Beheer B.V. Novel sulfur-containing flavoring agents. 4,380,655, Cl. 549-472.000.

VanderLugt, Thomas, Jr., to James River Corporation of Virginia. Method of closing an open end of a tube or tubular container. 4,380,447, Cl. 493-102.000.

Vanderwerf, Dennis F., to Minnesota Mining & Manufacturing Company. Variable focal length projection lens for use on overhead projectors. 4,380,374, Cl. 350-423.000.

Van Loveren, Augustinus G.: *See*—
Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., 4,380,658, Cl. 549-525.000.

van Maanen, Johannes D., to Tevopharm-Schiedam B.V. Device for pushing objects off a conveyor. 4,380,283, Cl. 198-456.000.

Van Roekel, John R.: *See*—
Ziegler, Michael L., II; Druke, Michael B.; Van Roekel, John R.; and Baxter, Ward, II, 4,380,812, Cl. 371-38.000.

Van Scott, Eugene J.; and Yu, Ruey J. Topical treatment of dry skin. 4,380,549, Cl. 424-317.000.

Van Siclen, Howard E., Jr., to Bendix Corporation, The. Ignition system for an internal combustion engine. 4,380,224, Cl. 123-602.000.

Varian Associates, Inc.: *See*—
Stevenson, David M.; and Flanders, Gale L., 4,380,829, Cl. 455-327.000.

Veigel, Neil D.: *See*—
Blocher, John M., Jr.; Veigel, Neil D.; and Landrigan, Richard B., 4,380,556, Cl. 427-6.000.

Velenyi, Louis J.; and Krupa, Andrew S., to Standard Oil Company, The. Conversion of 2-phenyl propanal to 2-indanone. 4,380,672, Cl. 568-310.000.

Velenyi, Louis J.: *See*—
Dolhyj, Serge R.; and Velenyi, Louis J., 4,380,683, Cl. 585-268.000.

Velo, Henri J., to U.S. Philips Corporation. Electronic differential controller. 4,380,739, Cl. 330-254.000.

Verdicchio, Robert J.: *See*—
Lindemann, Martin K. O.; Mayhew, Raymond L.; O'Lenick, Anthony J., Jr.; and Verdicchio, Robert J., 4,380,637, Cl. 548-112.000.

Vicard, Jean-Francois, to Societe Lab. Industrial chimneys with forced draught. 4,380,189, Cl. 98-58.000.

Victor Company of Japan, Ltd.: *See*—
Hirata, Atsumi; Tajima, Osamu; Kaneda, Isami; Sugiyama, Hiroyuki; Saito, Takashi; and Mochizuki, Masafumi, 4,380,780, Cl. 360-97.000.
Hirata, Atsumi, 4,380,781, Cl. 360-97.000.
Tanaka, Yoshiaki; and Inami, Mamoru, 4,380,732, Cl. 324-77.00D.

Vinson, Carl G., Jr.: *See*—
Leitert, Frederick C.; and Vinson, Carl G., Jr., 4,380,682, Cl. 570-219.000.

Vitale, Nicholas G.: *See*—
Folsom, Lawrence R.; Dineen, John J.; Vitale, Nicholas G.; and Balas, Charles B., Jr., 4,380,152, Cl. 60-520.000.

Voest-Alpine Aktiengesellschaft: *See*—
Sulzbacher, Horst, 4,380,469, Cl. 75-38.000.

Vogel, Diane C.: *See*—
Reichelderfer, Richard F.; Vogel, Diane C.; and Tang, Marian C., 4,380,488, Cl. 156-643.000.

Vogl, Otto: *See*—
Yoshida, Shohei; and Vogl, Otto, 4,380,643, Cl. 548-260.000.

Voide-Vuissoz, Suzanne, heir: *See*—
Vuissoz, Constant, deceased; Mosoni-Vuissoz, Cesarine, heir; and Voide-Vuissoz, Suzanne, heir, 4,380,430, Cl. 431-347.000.

von Treu AG: *See*—
Wittenhorst, Augustinus J. M., 4,380,505, Cl. 252-359.00R.

von Bonin, Wulf; and Zaby, Gottfried, to Bayer Aktiengesellschaft. Intumescent compositions. 4,380,593, Cl. 521-163.000.

Von Holdt, John W. Manually removable seal for buckets and cans. 4,380,305, Cl. 220-306.000.

Von Holdt, John W. Longitudinally expansible and contractible hydrostatic mold gate. 4,380,422, Cl. 425-146.000.

Vought Corporation: *See*—
Fling, George K., 4,380,342, Cl. 277-188.00A.

Vuissoz, Constant, deceased (by Preux, Marie Vuissoz-de, heir); by Mosoni-Vuissoz, Cesarine, heir; and by Voide-Vuissoz, Suzanne, heir, to Limtel, Ltd. Central heating apparatus. 4,380,430, Cl. 431-347.000.

W. C. Bradley Co.: *See*—
Douglas, Fred O., 4,380,247, Cl. 137-382.000.

W. C. Heraeus GmbH: *See*—
Bischoff, Albrecht, 4,380,775, Cl. 357-67.000.
WABCO Fahrzeugbremsen G.m.b.H.: *See*—
Reinecke, Erich; and Klatt, Alfred, 4,380,177, Cl. 74-475.000.
Wagner, Karl: *See*—
Engelsmann, Dieter; Hoffacker, Franz; Kovacic, Guido; Lermann, Peter; Luhrig, Hermann; and Wagner, Karl, 4,380,382, Cl. 354-275.000.
Wagner, Robert S., to Harris Corporation. RF Amplifier apparatus. 4,380,738, Cl. 330-151.000.
Wagner, Terrence L.: *See*—
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Wainman, Roy: *See*—
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Waldschutz, Heinz; Rauner, Franz; and Patzelt, Helmut, to Daimler-Benz A.G. Labyrinth seal for slip ring switch for steering wheels of motor vehicles. 4,380,341, Cl. 277-56.000.
Walker, Jesse P.; and Robertson, William H., to Milliken Research Corporation. Automatic fiber blender. 4,380,095, Cl. 19-80.00R.
Wallace Computer Services, Inc.: *See*—
Steidinger, Donald J., 4,380,315, Cl. 229-69.000.
Walsh, Michael M., to Eaton Corporation. Valve disabling mechanism. 4,380,219, Cl. 123-198.00F.
Walsh, Thomas A., to R. Howard Strasbaugh, Inc. Lap shaping machine with oscillatable point cutter and selectively rotatable or oscillatable lap. 4,380,412, Cl. 409-314.000.
Walter, Wolfgang, to Zahnradfabrik Friedrichshafen, AG. Spur rack hydrosteering. 4,380,273, Cl. 180-132.000.
Walters, John D. Cam operated friction clutch. 4,380,280, Cl. 192-78.000.
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Wandel U. Goltermann GmbH & Co.: *See*—
Alker, Dietrich E., 4,380,731, Cl. 324-51.000.
Wang, Pen-Chung: *See*—
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Wasmer, Anthony E.; and Koenigs, Stephen L., to Tecumseh Products Company. Breaker point system. 4,380,217, Cl. 123-146.50A.
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Watchko, George R., to General Electric Company. Primer or solvent resistant protective coating. 4,380,596, Cl. 524-86.000.
Waters, Kenneth H.; Hopkins, John R.; and Payton, Charles E., to Conoco Inc. Method and apparatus for shear wave logging. 4,380,806, Cl. 367-27.000.
Wattron, Albert; and Quirin, Michel, to Belrecolt S.A. Agricultural machine for the tedding or conditioning of fodder. 4,380,142, Cl. 56-370.000.
Weaver, Marvin P., to Robertshaw Controls Company. Valve construction having multiple piston means and method of making the same. 4,380,251, Cl. 137-877.000.
Weaver, Max A.: *See*—
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Webb, Monty F., to Teccor Electronics, Inc. Method of making a semiconductor switching device. 4,380,114, Cl. 29-588.000.
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Weghaupt, Erich, to Kraftwerk Union Aktiengesellschaft. Generator rotor, especially turbo-generator rotor with superconducting field winding. 4,380,356, Cl. 384-133.000.
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Weissman, Bernard. Detent device for a removable dental prosthesis. 4,380,434, Cl. 433-177.000.
Wellington, Scott L., to Shell Oil Company. Reservoir-tailored CO_2-aided oil recovery process. 4,380,266, Cl. 166-252.000.
Welsh, David A.; Dowbenko, Rostyslaw; Das, Suryya K.; Kania, Charles M.; and Christenson, Roger M., to PPG Industries, Inc. Thermosetting catonic acrylic latices and their use in coating compositions. 4,380,601, Cl. 524-555.000.
Welzel, Josef: *See*—
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Wesemeyer, Jurgen; Haubner, Georg; and Meier, Werner, to Robert Bosch GmbH. Vehicle engine ignition system utilizing light guides for protection against interference. 4,380,225, Cl. 123-613.000.
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Sun, Shan C.; and Church, Larry L., 4,380,746, Cl. 332-9.00R.
Swensrud, Roger L.; Pavlik, Dennis; and DeLuca, John J., 4,380,362, Cl. 339-112.00L.
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Whirlpool Corporation: *See*—
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White, David R., to Upjohn Company, The. Process for preparing 6'-methylspectinomycin and analogs thereof. 4,380,651, Cl. 549-361.000.
White, David R., to Upjohn Company, The. Enamines of 6'-methylspectinomycin and process for preparing the same. 4,380,652, Cl. 549-361.000.
White, Eugene B., Jr., to White Machinery Corporation. Vehicle having improved coupling system and system for absorption of shock on coupling. 4,380,198, Cl. 105-26.00R.
White, Gordon E.: *See*—
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Wick, Gerhard: *See*—
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Wicks, Edward A. Method and system for providing life-sustaining air to persons entrapped within a burning building. 4,380,187, Cl. 98-39.000.
Wiener & Co. B.V.: *See*—
Tadema, Jan C., 4,380,193, Cl. 99-452.000.
Wiesner, Karel; and Tsai, Thomas Y. R., to Advance Biofactures Corp. Novel isomers of bufalin and resibufogenin and their preparation. 4,380,624, Cl. 536-5.000.
Wilcox, Donald G.; and Zambrano, Nobile, to Show-Pak, Incorporated. Socket wrench display package. 4,380,293, Cl. 206-563.000.
Wilde, Eugen: *See*—
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Wildman, John R.; and Morrison, Howard J., to Marvin Glass & Associates. Four wheel drive toy. 4,380,135, Cl. 46-219.000.
Wiles, William J. Injection molding valve pin direct pneumatic actuator. 4,380,426, Cl. 425-566.000.
Wilkinson, John R., to Bendix Corporation, The. Digital roughness sensor. 4,380,800, Cl. 364-431.080.
Williams, Arden. Scalp massaging apparatus. 4,380,230, Cl. 128-49.000.
Williams, Graham L.: *See*—
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Williams, William R., to U.S. Industries, Inc. Feed gate for poultry conveyor feeders and the like. 4,380,214, Cl. 119-51.0CF.
Willis, Earl C.: *See*—
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Wilson, Albert, to Litton Systems, Inc. Vibrating screen with self-supporting screen cloth. 4,380,494, Cl. 209-319.000.
Wilson, Earl: *See*—
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Winkler, Edward: *See*—
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Wisco Corporation: *See*—
Sorensen, Norman L.; and Pohl, Lothar, 4,380,351, Cl. 296-217.000.
Wisda, Michael S. Electrical switch. 4,380,704, Cl. 307-116.000.
Wisnouskas, Joseph S.; and Ho, Roland, to Occidental Chemical Corporation. Process for preparing phosphorus acid from industrial waste materials. 4,380,531, Cl. 423-316.000.

Wittenhorst, Augustinus J. M., to von Treu AG. Apparatus for producing aerosol product. 4,380,505, Cl. 252-359.00R.
Wittmann, Heinz, to TMC Corporation. Ski brake. 4,380,345, Cl. 280-605.000.
Witzel, Bruce E.; Finke, Paul E.; and Allison, Debra L., to Merck & Co., Inc. Process for preparing Benzoxepino- or Benzthiapino[4,3-b]pyrrole-2-acetic acids. 4,380,645, Cl. 548-430.000.
Woesler, Ehrenfried, to Ford Motor Company. Support member for an exhaust pipe of a motor vehicle. 4,380,324, Cl. 248-610.000.
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Wojtowicz, John A.; and Gergo, Andree M. B., to Olin Corporation. Gas scavenger agents for containers of solid chloroisocyanurates. 4,380,501, Cl. 252-186.240.
Wojtowicz, John A., to Olin Corporation. Process for the production of dibasic magnesium hypochlorite. 4,380,533, Cl. 423-473.000.
Wolf, Erwin: *See*—
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Wong, Rayman Y., to Stauffer Chemical Company. Amine oxanilic acid salts as herbicide extenders. 4,380,467, Cl. 71-100.000.
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Woolfson, Joseph W. Magnetic lock. 4,380,162, Cl. 70-276.000.
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Adler, Ralph P. I.; Gorsuch, Thomas J.; Murty, Yellapu V.; and Woronicki, Alexander R., 4,380,262, Cl. 164-423.000.
Worsman, Adrian D., to Mitel Corporation. Charge redistribution circuit having a reduced area. 4,380,756, Cl. 340-347.0AD.
Wortley, John P. A.; and Woolner, John, to IMI Kynoch Limited. Anode. 4,380,493, Cl. 204-105.00M.
Wozniak, David A., to Dwyer Instruments, Inc. Roll-up type U-tube manometer. 4,380,173, Cl. 73-747.000.
Wrathall, Robert S., to Motorola, Inc. Voltage reference circuit. 4,380,706, Cl. 307-297.000.
Wright, Howard J.; and Scherrer, Joseph H., to Cook Paint and Varnish Company. Etherified methylol polyamide crosslinking agent, process for producing the same and resins crosslinked therewith. 4,380,611, Cl. 525-418.000.
Wright, William E., to Carrier Corporation. Heat exchanger tube support assembly. 4,380,263, Cl. 165-76.000.
Wrobel, Joseph J.: *See*—
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Wu, Pai-Chuan: *See*—
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Wusthof, Peter; and Schneider, Johann, to Rexroth GmbH. Internal gear machine with rotary valve disk. 4,380,420, Cl. 418-61.00B.
Wydro, Richard A., Sr., to Western Electric Company, Inc. Method of producing solder spheres. 4,380,518, Cl. 264-13.000.
Xerox Corporation: *See*—
Boggs, David R., 4,380,761, Cl. 340-825.500.
Kingsley, William, 4,380,389, Cl. 355-50.000.
Sprague, Robert A., 4,380,373, Cl. 350-356.000.
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Yamada, Kantaro: *See*—
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Yamaguchi, Akihiro; Kobayashi, Tadashi; Yamaguchi, Keizaburo; and Murakami, Hisamichi, to Mitsui Toatsu Chemicals, Incorporated. Process for the preparation of 2,2'-bis(4-substituted phenol)sulfides. 4,380,671, Cl. 568-48.000.
Yamaguchi, Keizaburo: *See*—
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Yamaha Hatsudoki Kabushiki Kaisha: *See*—
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Yamashita, Akio; and Hayami, Masaaki, to Matsushita Electric Industrial Company, Limited. Styryl-like compounds showing a color-developing and bleaching behavior with improved stability and prolonged lifetime. 4,380,629, Cl. 542-455.000.
Yanagisawa, Masahiro, to Nippon Electric Co., Ltd. Process for manufacturing a protective polysilicate layer of a record member by a laser beam and a magnetic record member suitably manufactured thereby. 4,380,558, Cl. 427-53.100.
Yannone, Robert A.; and Kiscaden, Roy W., to Westinghouse Electric Corp. System and method for accelerating and sequencing industrial gas turbine apparatus and gas turbine electric power plants preferably with a digital computer control system. 4,380,146, Cl. 60-39.141.
Yano, Hiroshi; Kawasaki, Teruo; Nomura, Hiroyuki; and Takeuchi, Mikio, to Nissan Motor Company, Limited. Frequency and speed display device. 4,380,733, Cl. 324-166.000.
Yarborough, G. Wirth, Jr. Small weapons simulator. 4,380,437, Cl. 434-18.000.
Yasu, Mitsuho: *See*—
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Yasuda, Kazuo; Tamura, Akihiko; and Nakamura, Yoshimitsu, to Konishiroku Photo Industry Co., Ltd. Method for controlling prefatiguing illumination of a photosensitive member. 4,380,386, Cl. 355-3.00R.
Yeh, Chun T. Tape rewinding apparatus for video cassette. 4,380,322, Cl. 242-198.000.
Yoder, Nax N., to United States of America, Navy. High-performance bipolar microwave transistor. 4,380,774, Cl. 357-34.000.
Yokomichi, Isao: *See*—
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Shigehara, Itaru; and Miyaji, Mikio, 4,380,670, Cl. 564-407.000.
Yoneda, Naoto; Kato, Jyoji; and Kinashi, Keizo, to Tanabe Siyaku Co., Ltd. 2-Oxoimidazolidine derivatives. 4,380,644, Cl. 548-321.000.
Yoshida, Kazumasa; and Watabe, Michio, to Toshiba Battery Co., Ltd. Air cell. 4,380,576, Cl. 429-27.000.
Yoshida Kogyo K. K.: *See*—
Fukuroi, Takeo, 4,380,098, Cl. 24-205.16R.
Yoshida, Shohei; and Vogl, Otto, to Asahi Glass Company, Ltd. Benzotriazole compound and homopolymer or copolymers thereof. 4,380,643, Cl. 548-260.000.
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, to Kureha Kagaku Kogyo Kabushiki Kaisha. Pharmaceutical composition containing para-amino-benzoic acid-N-D-mannoside as an active ingredient. 4,380,536, Cl. 424-180.000.
Young, Mark W.: *See*—
Nield, Eric; Higgins, David E.; and Young, Mark W., 4,380,621, Cl. 528-287.000.
Young, William R.: *See*—
Cohen, Paul B.; Young, William R.; and Edwards, W. Dale, 4,380,710, Cl. 307-475.000.
Yu, Ruey J.: *See*—
Van Scott, Eugene J.; and Yu, Ruey J., 4,380,549, Cl. 424-317.000.
Yugen Kaisha Batora Konsaruteingu: *See*—
Okamoto, Ikuko, 4,380,438, Cl. 434-157.000.
Zaba, Tadeusz, to BBC Brown, Boveri & Co. Ltd. Steam power plant containing pressure-fired steam generator with fluidized bed firing. 4,380,147, Cl. 60-39.182.
Zaby, Gottfried: *See*—
von Bonin, Wulf; and Zaby, Gottfried, 4,380,593, Cl. 521-163.000.
Zack, Larry E.: *See*—
Glinka, John S.; and Zack, Larry E., 4,380,316, Cl. 232-16.000.
Zahnradfabrik Friedrichshafen AG: *See*—
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Walter, Wolfgang, 4,380,273, Cl. 180-132.000.
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Umezawa, Hamao; Okami, Yoshiro; and Kondo, Shinichi, 4,380,581, Cl. 435-80.000.
Zambrano, Nobile: *See*—
Wilcox, Donald G.; and Zambrano, Nobile, 4,380,293, Cl. 206-563.000.
Zander, Dennis R.: *See*—
Foote, James C.; and Zander, Dennis R., 4,380,180, Cl. 74-821.000.
Zeeh, Bernd: *See*—
Sauter, Hubert; Ammermann, Eberhard; Rentzea, Costin; Zeeh, Bernd; Jung, Johann; and Pommer, Ernst-Heinrich, 4,380,546, Cl. 424-269.000.
Zenith Radio Corporation: *See*—
Moon, Frederick H., 4,380,827, Cl. 455-179.000.
Moon, Frederick H., 4,380,828, Cl. 455-319.000.
Zhestkov, Vitaly I.: *See*—
Abduganiev, Abdurakhim; Tikhonov, Valentin N.; Shlykov, Gennady N.; Zhestkov, Vitaly I.; Krjuk, Timur P.; Mukhin, Viktor M.; and Tikhonov, Jury N., 4,380,143, Cl. 57-89.000.
Zhivotchenko, Alexandr D.: *See*—
Shevakin, Jury F.; Shpichinetsky, Efim S.; Fedorenko, Valentina P.; Efremov, Boris N.; Klevchenkova, Maria N.; Andrjuschenko, Ivan A.; Krasnoselsky, Iosif A.; Anikeev, Evgeny F.; Ivanov, Evgeny A.; Khomyachkov, Anatoly P.; Shvarts, Naum A.; Kozhevnikova, Ljudmila V.; Romanova, Roza M.; and Zhivotchenko, Alexandr D., 4,380,528, Cl. 420-505.000.
Ziegler, Michael L., II; Druke, Michael B.; Van Roekel, John R.; and Baxter, Ward, II, to Data General Corporation. Refresh and error detection and correction technique for a data processing system. 4,380,812, Cl. 371-38.000.
Zinaida, Zosim: *See*—
Gutnick, David L.; Rosenberg, Eugene; Belsky, Igal; and Zinaida, Zosim, 4,380,504, Cl. 252-356.000.
Zodrow, Rudolf, to Jagenberg Werke. Method and apparatus for changing the label magazine boxes of labeling machines. 4,380,487, Cl. 156-568.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 19TH DAY OF APRIL, 1983

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Lapp, James F.; and McGrath, Thomas F., Re. 31,210, Cl. 226-119.000.

Allen, Robert J.: *See*—
Petrow, Henry G.; and Allen, Robert J., Re. 31,214, Cl. 524-411.000.

Anderson, Charles W. Agricultural implement with foldable tool supporting frame. Re. 31,209, Cl. 172-311.000.

Bethlehem Steel Corporation: *See*—
Brachman, Armand E., Re. 31,213, Cl. 428-462.000.

Brachman, Armand E., to Bethlehem Steel Corporation. Polyolefin composition having high impact resistance and high temperature flow resistance. Re. 31,213, Cl. 428-462.000.

Central Welding Supply Co., Inc.: *See*—
Hairgrove, Nelson, Sr., Re. 31,216, Cl. 219-132.000.

Hairgrove, Nelson, Sr., to Central Welding Supply Co., Inc. Controller for DC arc welding generators. Re. 31,216, Cl. 219-132.000.

Hollier, John C. L.: *See*—
Stranahan, John J.; and Hollier, John C. L., Re. 31,215, Cl. 431-4.000.

Lapp, James F.; and McGrath, Thomas F., to Acme Visible Records, Inc. Apparatus and method for feeding and collecting continuous web material. Re. 31,210, Cl. 226-119.000.

McGrath, Thomas F.: *See*—
Lapp, James F.; and McGrath, Thomas F., Re. 31,210, Cl. 226-119.000.

Monroe Auto Equipment Company: *See*—
Smith, Charles J., Re. 31,212, Cl. 280-668.000.

Petrow, Henry G.; and Allen, Robert J. Colloidal sol antimony pentaoxide flameproofing compositions. Re. 31,214, Cl. 524-411.000.

Smith, Charles J., to Monroe Auto Equipment Company. Vehicle suspension device. Re. 31,212, Cl. 280-668.000.

Stranahan, John J.; and Hollier, John C. L., to Texaco Inc. Smokeless gas flare with specific gravity gas analyzer for reduction of noise. Re. 31,215, Cl. 431-4.000.

Texaco Inc.: *See*—
Stranahan, John J.; and Hollier, John C. L., Re. 31,215, Cl. 431-4.000.

Whitehead, Edwin N. Magnetically coded identification card. Re. 31,211, Cl. 235-449.000.

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CERTIFICATES WERE ISSUED

Winicov, Murray W.; and Oberlander, Michael, to West Agro-Chemical, Inc., Germicidal iodine compositions with enhanced iodine stability. B1 4,271,149, Cl. 424—150.

West Agro-Chemical, Inc.: *See*—
Winicov, Murray W.; and Oberlander, Michael. B1 4,271,149, Cl. 424—150.

Rönbeck, Arne Ingbert, to AB Volvo. Handling apparatus. B1 3,902,606, Cl. 414—733.

AB Volvo: *See*—
Rönbeck, Arne Ingbert. B1 3,902,606, Cl. 414—733.

Gilano, Michael N.; Beaupre, Richard E.; and Lipson, Melvin A., to Dynachem Corporation. Polymerization composition and process having polymeric binding agents. B1 3,953,309, Cl. 204—159.16.

Dynachem Corporation: *See*—
Gilano, Michael N.; Beaupre, Richard E.; and Lipson, Melvin A. B1 3,953,309, Cl. 204—159.16.

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Adamson, Gerhard; and Rousseau, Walter F., to Union Carbide Corporation. Packaging container. 268,649, 4-19-83, Cl. D9-416.000.

Allgood, Charles H., II. Plaque with minnow. 268,654, 4-19-83, Cl. D11-134.000.

American Optical Corporation: *See*—
Tenny, Dale E. 268,683, Cl. D16-102.000.

Anderson, Donald [illegible], to Truth Incorporated. Combined check rail lock and keeper. 268,643, 4-19-83, Cl. D8-337.000.

Annalee Mobilitee Dolls, Inc.: *See*—
Thorndike, Barbara A. D., 268,692, Cl. D21-148.000.

Atari, Inc.: *See*—
Nishi, Roy M., 268,689, Cl. D21-48.000.

Bart, Philip D. Stroller. 268,661, 4-19-83, Cl. D12-129.000.

Bausch & Lomb Incorporated: *See*—
Chuboff, David P.; Greb, Francis J.; and Takeuchi, Tom, 268,684, Cl. D16-102.000.

Bennett, Brian S., to Dunlop Limited. Tire for a vehicle wheel. 268,663, 4-19-83, Cl. D12-145.000.

Bennett, William G. Toy diving board. 268,690, 4-19-83, Cl. D21-109.000.

Bevilaqua, Ernest M.; McCroskery, Allan L.; and Knerr, Theodore N., to Otis Elevator Company. Control panel for elevator systems. 268,668, 4-19-83, Cl. D13-35.000.

Bliss & Laughlin Industries Incorporated: *See*—
Johnson, David B.; and Schroeder, Verdell H., 268,679, Cl. D15-76.000.

Bonforte, Anthony G. Trim blade for lawns and the like. 268,640, 4-19-83, Cl. D8-08.000.

Bonforte, Anthony G. Trim blade for lawns and the like. 268,641, 4-19-83, Cl. D8-08.000.

Bounds, William E. Nutmeg grater. 268,638, 4-19-83, Cl. D7-53.000.

Bowen, Mark. Scalp hypothermia cap. 268,696, 4-19-83, Cl. D24-34.000.

Bukowski, Mark F.: *See*—
Bukowski, Michelene F., 268,697, Cl. D24-36.000.

Bukowski, Michelene F., to Bukowski, Mark F. Gum-cleaning implement. 268,697, 4-19-83, Cl. D24-36.000.

Chuboff, David P.; Greb, Francis J.; and Takeuchi, Tom, to Bausch & Lomb Incorporated. Pair of spectacles. 268,684, 4-19-83, Cl. D16-102.000.

Clayton, Jessie R. Combined aquarium and cover. 268,705, 4-19-83, Cl. D30-6.000.

Cole & Mason, USA, Ltd.: *See*—
Cowan, David A., 268,637, Cl. D7-53.000.

Collins, Christopher K. Golf club. 268,691, 4-19-83, Cl. D21-217.000.

Corn, James F.: *See*—
Muller, Max; and Corn, James F., 268,706, Cl. D32-01.000.

Cowan, David A., to Cole & Mason, USA, Ltd. Condiment mill. 268,637, 4-19-83, Cl. D7-53.000.

Doyle, Barbara. Infant thermometer. 268,651, 4-19-83, Cl. D10-57.000.

Dunlop Limited: *See*—
Bennett, Brian S., 268,663, Cl. D12-145.000.
Shirashoji, Hisashi, 268,662, Cl. D12-140.000.

Esaki, Akira: *See*—
Ohie, Yoshihisa; Esaki, Akira; Sawada, Masaji; and Yamasaki, Tsutomu, 268,677, Cl. D14-103.000.

Fielder, Jean C., to Pace Incorporated. Combined power supply, tool holder and support therefor. 268,642, 4-19-83, Cl. D8-71.000.

Fontana, Dennis J. Mountable record display device. 268,634, 4-19-83, Cl. D6-114.000.

Gakken Co., Ltd. (Kabushiki Kaisha Gakushu Kenkyusha): *See*—
Iwaoka, Masao; Igeta, Yousuke; and Kobayashi, Fumio, 268,670, Cl. D14-1.000.

Gentry, Robert E. Child's rocking chair or similar article. 268,632, 4-19-83, Cl. D6-11.000.

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H. W. Hull & Sons, Inc.: *See*—
Hull, James W., 268,636, Cl. D6-193.000.

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Hanke, Rudolph, to Hama Hamaphot KG. Slide viewer. 268,681, 4-19-83, Cl. D16-17.000.

Hass, William J. Radio receiver. 268,675, 4-19-83, Cl. D14-68.000.

Helior S.A.: *See*—
Rousseau, Emile, 268,652, Cl. D11-102.000.

Hesston Corporation: *See*—
Swenson, Edward L.; Roth, Allen K.; Jones, Larry B.; and Robbins, Richard J., 268,678, Cl. D15-27.000.

Holce, Thomas J.; and Huckins, Charles M., to Sentrol, Inc. Combined switch housing and integral mounting bracket. 268,669, 4-19-83, Cl. D13-38.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Ohba, Yasuhiro, 268,660, Cl. D12-110.000.

Huckins, Charles M.: *See*—
Holce, Thomas J.; and Huckins, Charles M., 268,669, Cl. D13-38.000.

Hudson, Isaac J., Jr. Packaging tray or the like. 268,646, 4-19-83, Cl. D9-347.000.

Hull, James W., to H. W. Hull & Sons, Inc. Chair panel. 268,636, 4-19-83, Cl. D6-193.000.

Igeta, Yousuke: *See*—
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Iijima, Takekazu, to Pioneer Kabushiki Kaisha. Loudspeaker. 268,673, 4-19-83, Cl. D14-34.000.

Ivac Corporation: *See*—
Knute, Wallace L., 268,698, Cl. D24-52.000.

Iwaoka, Masao; Igeta, Yousuke; and Kobayashi, Fumio, to Gakken Co., Ltd. (Kabushiki Kaisha Gakushu Kenkyusha). Audio-visual sheet player. 268,670, 4-19-83, Cl. D14-1.000.

J. Marttiinin Puukkotehdas Oy: *See*—
Liukko, Lasse; and Maunu, Pentti, 268,694, Cl. D22-1.000.

James, Harry E., Jr. Reflector. 268,704, 4-19-83, Cl. D26-118.000.

Johannsen, Donald R. Pumpkin carving knife. 268,639, 4-19-83, Cl. D7-143.000.

Johnson, David B.; and Schroeder, Verdell H., to Bliss & Laughlin Industries Incorporated. Housing for a portable bag closing sewing machine. 268,679, 4-19-83, Cl. D15-76.000.

Johnson, Edward M., Jr., to Kolcraft Products, Inc. Rockable infant seat. 268,631, 4-19-83, Cl. D6-10.000.

Johnson, Robert L. Game board or similar article. 268,688, 4-19-83, Cl. D21-34.000.

Jones, Larry B.: *See*—
Swenson, Edward L.; Roth, Allen K.; Jones, Larry B.; and Robbins, Richard J., 268,678, Cl. D15-27.000.

Jordan Concepts, Inc.: *See*—
Jordan, John S., 268,674, Cl. D14-60.000.

Jordan, John S., to Jordan Concepts, Inc. Decorative shell cover for telephones. 268,674, 4-19-83, Cl. D14-60.000.

Jordan, William D.; and Moore, Marvin F., to Thermalloy Incorporated. Heat sink or similar article. 268,667, 4-19-83, Cl. D13-23.000.

K. G. M. Corporation: *See*—
Kolf, John W., 268,695, Cl. D22-99.000.

Kingsford, Ted I., to Plough, Inc. Cosmetic container. 268,647, 4-19-83, Cl. D9-389.000.

Kirstine, Dale J., to Kirstine/Hendricks. Dispenser cap. 268,650, 4-19-83, Cl. D9-450.000.

Kirstine/Hendricks: *See*—
Kirstine, Dale J., 268,650, Cl. D9-450.000.

Knerr, Theodore N.: *See*—
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Knute, Wallace L., to Ivac Corporation. IV Spike and drop former housing. 268,698, 4-19-83, Cl. D24-52.000.

Kobayashi, Fumio: *See*—
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Kobayashi, Masaharu: *See*—
Ohya, Toshio; and Kobayashi, Masaharu, 268,671, Cl. D14-11.000.

Kodaka, Tatsuya. Stag-beetle figure. 268,655, 4-19-83, Cl. D11-162.000.

Kodaka, Tatsuya. Beetle figure. 268,656, 4-19-83, Cl. D11-162.000.

Kodaka, Tatsuya. Butterfly figure. 268,657, 4-19-83, Cl. D11-162.000.

Kolcraft Products, Inc.: *See*—
Johnson, Edward M., Jr., 268,631, Cl. D6-10.000.

Kolf, John W., to K. G. M. Corporation. Deer scent dispenser. 268,695, 4-19-83, Cl. D22-99.000.

Lane, Douglas M.: *See*—
Sauls, Thomas P.; and Lane, Douglas M., 268,633, Cl. D6-49.000.

Liukko, Lasse; and Maunu, Pentti, to J. Marttiinin Puukkotehdas Oy. Knife. 268,694, 4-19-83, Cl. D22-1.000.

Lloyd-Jones, Robert, to Salkhad Pty. Ltd. Combined soffit and fascia panel. 268,703, 4-19-83, Cl. D25-55.000.

M & M Luggage Co., Inc.: *See*—
Stark, Ted, 268,627, Cl. D3-71.000.
Stark, Ted, 268,628, Cl. D3-71.000.
Stark, Ted, 268,629, Cl. D3-71.000.

Marganne, Florence J., to Peinture Corona S.A. Wall covering. 268,708, 4-19-83, Cl. D92-25.000.

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McCroskery, Allan L.: *See*—
Bevilaqua, Ernest M.; McCroskery, Allan L.; and Knerr, Theodore N., 268,668, Cl. D13-35.000.

McPherson, Mathew A. Adapter mount for microphones and the like. 268,672, 4-19-83, Cl. D14-13.000.

Miller, Harry C., to Sargent & Greenleaf, Inc. Combination lock fence lever with eccentric roller nose. 268,644, 4-19-83, Cl. D8-343.000.

Moore, Marvin F., to Thermalloy Incorporated. Heat sink or similar article. 268,666, 4-19-83, Cl. D13-23.000.

Moore, Marvin F.: *See*—
Jordan, William D.; and Moore, Marvin F., 268,667, Cl. D13-23.000.

Muller, Max; and Corn, James F. Shoe sole cleaning machine. 268,706, 4-19-83, Cl. D32-01.000.

Nakade, Kenichi, to Ricoh Company, Ltd. Sorter for electrostatic copier. 268,682, 4-19-83, Cl. D16-32.000.

Nishi, Roy M., to Atari, Inc. Remote control unit for electronic game. 268,689, 4-19-83, Cl. D21-48.000.

Ohba, Yasuhiro, to Honda Giken Kogyo Kabushiki Kaisha. Motortricycle. 268,660, 4-19-83, Cl. D12-110.000.

Ohie, Yoshihisa; Esaki, Akira; Sawada, Masaji; and Yamasaki, Tsutomu, to Sharp Corporation. Electronic computer. 268,677, 4-19-83, Cl. D14-103.000.

Ohmann, William; and Wiessner, Edward E., to Whirlpool Corporation. Filter for automatic washer agitator or similar article. 268,707, 4-19-83, Cl. D32-26.000.

Ohya, Toshio; and Kobayashi, Masaharu, to Sony Corporation. Video tape cassette. 268,671, 4-19-83, Cl. D14-11.000.

Ohya, Toshio, to Sony Corporation. Video camera with video tape recorder. 268,676, 4-19-83, Cl. D14-78.000.

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Sailhen, Pierre M., 268,699, Cl. D24-64.000.
Sailhen, Pierre M., 268,700, Cl. D24-64.000.
Sailhen, Pierre M., 268,701, Cl. D24-64.000.

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Sharp, Bernard C., 268,665, Cl. D12-187.000.

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Marganne, Florence J., 268,708, Cl. D92-25.000.

Phillips, Wyatt L.; and Schooler, Ronald D., to QuikTrip Corporation. Packaging container for food. 268,645, 4-19-83, Cl. D9-341.000.

Pioneer Kabushiki Kaisha: *See*—
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Reaume, Merlin F., to Standard Motors, Inc. Automobile. 268,659, 4-19-83, Cl. D12-92.000.

Redwine, Mary A. Disposable diaper rack. 268,635, 4-19-83, Cl. D6-130.000.

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Robbins, Richard J.: *See*—
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Rogers, James C. Stirrup for suspending books, papers and the like on the face of an inclined drawing board. 268,687, 4-19-83, Cl. D19-91.000.
Roth, Allen K.: *See*—
Swenson, Edward L.; Roth, Allen K.; Jones, Larry B.; and Robbins, Richard J., 268,678, Cl. D15-27.000.
Rousseau, Emile, to Helior S.A. Medal. 268,652, 4-19-83, Cl. D11-102.000.
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Seshimoto, Makoto, to Tokai Gakki Company, Ltd. Guitar head. 268,685, 4-19-83, Cl. D17-20.000.
Sharp, Bernard C., to Parker-Hannifin Corporation. Motorized rear view mirror. 268,664, 4-19-83, Cl. D12-187.000.
Sharp, Bernard C., to Parker-Hannifin Corporation. Motorized truck mirror. 268,665, 4-19-83, Cl. D12-187.000.
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Smargiassi, Francesco. Mirror stereoscope. 268,680, 4-19-83, Cl. D16-12.000.
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Spollino, Joseph A.; and Spollino, Ronald A. Combined ski and boot carrier. 268,626, 4-19-83, Cl. D3-36.000.
Spollino, Ronald A.: *See*—
Spollino, Joseph A.; and Spollino, Ronald A., 268,626, Cl. D3-36.000.
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Stark, Sven O. S., to Tetra Pak International AB. Packaging container. 268,648, 4-19-83, Cl. D9-416.000.
Stark, Ted, to M & M Luggage Co., Inc. Luggage. 268,627, 4-19-83, Cl. D3-71.000.
Stark, Ted, to M & M Luggage Co., Inc. Luggage. 268,628, 4-19-83, Cl. D3-71.000.
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Swenson, Edward L.; Roth, Allen K.; Jones, Larry B.; and Robbins, Richard J., to Hesston Corporation. Baler. 268,678, 4-19-83, Cl. D15-27.000.
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Moore, Marvin F., 268,666, Cl. D13-23.000.
Thorndike, Barbara A. D., to Annalee Mobilitee Dolls, Inc. Stuffed dragon-like animal. 268,692, 4-19-83, Cl. D21-148.000.
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Wilson, Michael C., to Tyke Corporation, The. Portable booster seat. 268,630, 4-19-83, Cl. D6-9.000.
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Works, Michael L. Outdoor recreational device. 268,693, 4-19-83, Cl. D21-244.000.
Yamasaki, Tsutomu: *See*—
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LIST OF PLANT PATENTEES

Conard-Pyle Company, The: *See*—
Corliss, Clifford D., 5,041, Cl. 50.000.
Corliss, Clifford D., to Conard-Pyle Company, The. Juniper plant - corcorcor variety. 5,041, 4-19-83, Cl. 50.000.
Jackson & Perkins Company: *See*—
Warriner, William A., 5,040, Cl. 11.000.
Warriner, William A., to Jackson & Perkins Company. Rose plant 74-1489-2. 5,040, 4-19-83, Cl. 11.000.

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187 4,380,414

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	273	268,625	D8—	08	268,640		134	268,654		35	268,668		32	268,682	D24—	34	268,696
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		268,628		337	268,643			268,657		11	268,671	D17—	20	268,685		64	268,699
		268,629		343	268,644	D12—	91	268,658		13	268,672	D19—	64	268,686			268,700
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	10	268,631		347	268,646		110	268,660		60	268,674	D21—	34	268,688	D25—	22	268,702
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	4,380,133		4,380,820		4,380,278		4,380,458		4,380,589		4,380,750
	4,380,157	08 :	4,380,321		4,380,304		4,380,521		4,380,636		4,380,773
	4,380,159		4,380,369		4,380,305	23 :	4,380,228		4,380,649		4,380,786
	4,380,190		4,380,470		4,380,308		4,380,336		4,380,651	35 :	4,380,139
	4,380,191		4,380,647		4,380,310		4,380,429		4,380,652		4,380,264
	4,380,194	09 :	4,380,187		4,380,315	24 :	4,380,094		4,380,718		4,380,267
	4,380,197		4,380,209		4,380,316		4,380,103		4,380,800	36 :	4,380,119
	4,380,229		4,380,210		4,380,332		4,380,269	27 :	4,380,208		4,380,123
	4,380,231		4,380,293		4,380,340		4,380,296		4,380,312		4,380,152
	4,380,235		4,380,402		4,380,353		4,380,482		4,380,374		4,380,162
	4,380,238		4,380,501		4,380,394		4,380,582		4,380,464		4,380,172
	4,380,243		4,380,513		4,380,413		4,380,802		4,380,543		4,380,180
	4,380,265		4,380,519		4,380,422	25 :	Re.31,214		4,380,565		4,380,224
	4,380,290		4,380,526		4,380,497		4,380,112	28 :	4,380,338		4,380,263
	4,380,294		4,380,533		4,380,511		4,380,153		4,380,524		4,380,352
	4,380,307		4,380,542		4,380,530		4,380,237	29 :	4,380,151		4,380,389
	4,380,318		4,380,696		4,380,554		4,380,262		4,380,169		4,380,409
	4,380,319		4,380,790		4,380,648		4,380,343		4,380,252		4,380,433
	4,380,326	10 :	4,380,257		4,380,677		4,380,344		4,380,270		4,380,434
	4,380,329		4,380,539		4,380,679		4,380,348		4,380,289		4,380,435
	4,380,334		4,380,586		4,380,680		4,380,431		4,380,424		4,380,471
	4,380,335		4,380,602		4,380,722		4,380,577		4,380,465		4,380,512
	4,380,363		4,380,603		4,380,738		4,380,587		4,380,611		4,380,531
	4,380,373		4,380,615		4,380,810		4,380,596		4,380,650		4,380,572
	4,380,380		4,380,618		4,380,822		4,380,723		4,380,793		4,380,578
	4,380,412	11 :	4,380,339		4,380,827		4,380,764	31 :	4,380,226		4,380,591
	4,380,432	12 :	4,380,090		4,380,828		4,380,807	33 :	4,380,234		4,380,605
	4,380,439		4,380,117	18 :	Re.31,215		4,380,812	34 :	4,380,134		4,380,638
	4,380,441		4,380,200		4,380,126		4,380,829		4,380,256		4,380,639
	4,380,456		4,380,227		4,380,155	26 :	Re.31,212		4,380,364		4,380,666
	4,380,467		4,380,232		4,380,173		4,380,111		4,380,391		4,380,710
	4,380,468		4,380,314		4,380,287		4,380,137		4,380,400		4,380,716
	4,380,478		4,380,327		4,380,301		4,380,149		4,380,425		4,380,749
	4,380,479		4,380,404		4,380,498		4,380,163		4,380,483		4,380,752
	4,380,485		4,380,419		4,380,499		4,380,178		4,380,490		4,380,769
	4,380,488		4,380,737		4,380,580		4,380,183		4,380,500		4,380,772
	4,380,566	13 :	4,380,129		4,380,585		4,380,192		4,380,518		4,380,794
	4,380,592		4,380,130		4,380,612		4,380,219		4,380,529		4,380,813
	4,380,613		4,380,214		4,380,635		4,380,276		4,380,571	37 :	4,380,220
	4,380,634		4,380,230		4,380,641		4,380,292		4,380,595		4,380,240
	4,380,687		4,380,247		4,380,698		4,380,351		4,380,598		4,380,460
	4,380,692		4,380,776		4,380,700		4,380,359		4,380,637		4,380,562

	4,380,730		4,380,804		4,380,362		4,380,201		4,380,297		4,380,805
39 :	4,380,175		4,380,819		4,380,401		4,380,254		4,380,325		4,380,815
	4,380,202	40 :	4,380,317		4,380,415		4,380,337		4,380,342		4,380,831
	4,380,215		4,380,584		4,380,459		4,380,379		4,380,347	49 :	4,380,346
	4,380,303		4,380,610		4,380,463	45 :	4,380,095		4,380,357	51 :	Re.31,210
	4,380,320		4,380,659		4,380,474		4,380,140		4,380,371		Re.31,211
	4,380,414		4,380,688		4,380,496		4,380,144		4,380,406		4,380,206
	4,380,446	42 :	Re.31,213		4,380,520		4,380,494		4,380,508		4,380,774
	4,380,484		4,380,097		4,380,535	47 :	4,380,251		4,380,569		4,380,795
	4,380,495		4,380,115		4,380,549		4,380,330		4,380,616	53 :	4,380,259
	4,380,556		4,380,118		4,380,590		4,380,453		4,380,657		4,380,295
	4,380,564		4,380,146		4,380,601		4,380,633		4,380,684		4,380,745
	4,380,606		4,380,154		4,380,654		4,380,742		4,380,695	54 :	4,380,131
	4,380,609		4,380,167		4,380,724	48 :	Re.31,216		4,380,701	55 :	4,380,107
	4,380,617		4,380,171		4,380,734		4,380,091		4,380,707		4,380,216
	4,380,619		4,380,207		4,380,746		4,380,105		4,380,709		4,380,217
	4,380,623		4,380,268		4,380,757		4,380,114		4,380,711		4,380,291
	4,380,656		4,380,282		4,380,759		4,380,127		4,380,736		4,380,396
	4,380,672		4,380,288		4,380,760		4,380,156		4,380,767		4,380,450
	4,380,682		4,380,300	43 :	4,380,299		4,380,242		4,380,788		4,380,570
	4,380,683		4,380,360	44 :	4,380,145		4,380,266		4,380,798		4,380,796
	4,380,727		4,380,361		4,380,160		4,380,271				

DESIGN PATENTS

06 :	268,626		268,697		268,631	26 :	268,639		268,653	40 :	268,645
	268,636		268,698		268,675		268,707	36 :	268,634	41 :	268,669
	268,638		268,702		268,684	27 :	268,643		268,659	47 :	268,625
	268,640	09 :	268,668		268,695		268,672		268,664		268,647
	268,641		268,683	20 :	268,678		268,679		268,665		268,654
	268,650	12 :	268,633		268,706	33 :	268,692	37 :	268,632	48 :	268,624
	268,651		268,661	21 :	268,644	34 :	268,627		268,646		268,646
	268,688		268,693	22 :	268,690		268,628		268,635		268,667
	268,689	13 :	268,674	24 :	268,642		268,629	39 :	268,704		268,705
	268,696	17 :	268,630	25 :	268,687		268,649				

PLANT PATENTS

06 :	5,040	25 :	5,041				

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